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ELECTROSTATIC DISCHARGE SUSCEPTIBILITY DATA

Volume II

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ELECTROSTATIC DISCHARGE SUSCEPTIBILITY DATA OF DISCRETE / PASSIVE DEVICES

Volume II

1989

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Under contract to:

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19. ABSTRACT (Continue on reverse if necessary and identify by block number) This publication contains Electrostatic Discharge (ESD) susceptibility data of electronic devices and is an update to the VZAP-1, the 1983 RAC ESD data compendium. Detailed susceptibility data is presented along with the ESD classification in accordance with MIL-HDBK-263 and MIL-STD-1686A for approximately 4,300 devices. This data is useful in the establishment of an ESD control program. The data contained in this publication is a product of the Reliability Analysis Center's VZAP data base, which is intended to be a central repository of ESD Susceptibility Data. <i>Keywords:</i>					
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RAC ESD DATABASE

Table 3 - MANUFACTURER LISTING

<u>CODE</u>	<u>MANUFACTURER NAME</u>	<u>CODE</u>	<u>MANUFACTURER NAME</u>
ALP	Alpha Industries	MOT	Motorola Semi
AM	American Microcircuits	MPI	Micropac Industries
AMD	Advanced Micro Devices	MSC	Microwave Semi Corp
AMP	Amperex Electronics	MSI	Microsystems International
ANA	Analog Devices	N/R	Not Reported
ANZ	Anzac Electronics	NCR	National Cash Register
ATM	ATMEL	NEC	Nippon Electric Company (NEC)
BEC	Beckman Instruments	NIT	Nitron
BEN	Bendix	NSC	National Semi
CCL	Croven Crystal Ltd.	NUC	Nucleonic Prod
CEN	Centralab	PLE	Plessey
CMP	Component Device Inc.	PPC	PPC Products
COD	Codi Semiconductor	PPI	Precision Products Inc.
CSI	Continental Semi. Inc.	PRE	Precision Monolithics
CYP	Cypress Semiconductor	RAY	Raytheon
DAL	Dale Electronics	RCA	RCA
DCC	Dynamic Control Corp	RI	Rockwell Intl (Includes Collins)
DEL	Delco Electronics	SCN	Semicon
DIC	Dickson Elec. Corp.	SEM	Semtech Corp.
ETC	Elec. Transistor Corp.	SEN	Sensitron Semi.
FSC	Fairchild	SEQ	SEEQ
GE	General Electric	SGS	SGS ATES
GEN	General Semiconductor	SIE	Siemens
GI	General Instruments	SIG	Signetics
GTL	Gilway Technical Lamp	SIL	Silicon General
HAR	Harris	SIX	Siliconix
HAU	Haufman	SOL	Solitron Devices
HEW	Hewlett Packard	SPR	Sprague Electric
HIT	Hitachi	SSD	Solid State Devices
HON	Honeywell	SSS	Solid State Scientific
HYB	Hybrid Systems	SUP	Supertex
HYC	Hycomp Inc.	SYN	Syntron
IDT	International Device Technologies	TEC	Teledyne Crystalonics
IIT	ITT Semiconductor	TEK	Tektronix
INM	INMOS	TEL	Teledyne
INS	Inselek	TEX	Texas Instruments
INT	Intel	THC	Thermometrics
IRC	Intl. Rectifier Corp.	TRC	Transition Elec. Corp.
ISL	Intersil	TRW	TRW
ITE	Intech	UDT	United Detector Technology
KSC	KSC Semiconductor Corp.	ULT	Ultronix Inc.
LEA	Lear Siegler	UNI	Unitrode
LTC	Linear Technology Corp.	VAR	Various
MAC	MACOM	VIS	Vishay
MAS	Microwave Associates	WES	Westinghouse
MCC	McCoy Electronics	XIC	Xicor
MIT	Micro Power Systems	ZIL	Zilog
MON	Monolithic Memories		
MOS	Mostek		

RAC ESD DATABASE

Table 4 - FAILURE CRITERIA LISTING

CODE	FAILURE CRITERIA
------	------------------

1	1 UA LEAKAGE AT 10V.
2	1 UA LEAKAGE AT 20V.
3	10 UA INPUT LEAKAGE PREVIOUSLY MEASURED TO BE 1 UA.
4	10% CHANGE IN ELECTRICAL PARAMETERS.
5	10% CHANGE IN LEAKAGE CURRENT.
6	10% PARAMETER CHANGE.
7	110= 4 UA.
8	2 MA LEAKAGE CURRENT OR OPEN CONDUCTOR LINES.
9	2 UA LEAKAGE CURRENT OR OPEN CONDUCTOR LINES.
10	2% CHANGE OF VOUT AT IL= 50UA.
11	20 UA LEAKAGE CURRENT OR OPEN CONDUCTOR LINES.
12	200 NA LEAKAGE CURRENT OR OPEN CONDUCTOR LINES.
13	25% LEAKAGE, 1UA LEAKAGE, FUNCTION FAILS.
14	50% DROP IN REVERSE VOLTAGE AT IR= 5UA.
15	50% DROP IN V(BR) CBO AT IB= 5UA.
16	50% DROP IN V(BR) GSS AT IG= 5UA.
17	50% INCREASE IN GATE LEAKAGE CURRENT.
18	A 10% CHANGE IN INPUT OFFSET VOLTAGE AND INPUT BIAS CURRENT.
19	A 10% OR > CHANGE IN ANY MEASURED ELECTRICAL PARAMETER WAS CONSIDERED A FAILURE.
20	A 10% OR > INC. IN MEAS. LEAKAGE CURRENT OR < A VOLT 10% < THE INITIAL BRKDN VOLT.
21	A CHANGE OF 0.5% OR GREATER TOLERANCE.
22	A SHIFT OF 10% OF INPUT OFFSET VOLTAGE AND INPUT BIAS CURRENT.
23	ANY MEASURABLE CHANGE IN AN ELECTRICAL PARAMETER.
24	BVBE AT IR= 100NA.
25	CATASTROPHIC FAILURE (INPUT CURRENT).
26	CATASTROPHIC.
27	CHANGE IN IGSS.
28	CHANGE IN IIH OF 10%.
29	CHANGE IN IIH OF 20NA AT VCC= 5.5V AND VIN= 2.4V.
30	CHANGE IN IIH OF 500% AT VIN= 2.7V.
31	CHANGE IN IIL OF +500% AT VIN= .45V.
32	CHANGE IN IIL OF 500% AT VIN= 5V.
33	CHANGE IN IIO OF 500%.
34	CHANGE IN IL OF +500% AT VIN= 1V.
35	CHANGE IN IR OF +500% AT VBR= 30V.
36	CHANGE IN IR OF +500% AT VR= 50V.
37	CHANGE IN IR OF 500% AT VBR= 10V.
38	CHANGE IN IR OF 500% AT VR= 35V.
39	CHANGE IN IS OF 500% AT VS= -10V.
40	CHANGE IN RESISTANCE OF .1%.
41	CHANGE IN RESISTANCE OF 2%.
42	CHANGE IN VOL OF .050V AT VCC= 4.5V, IOL= 2MA AND VIN= 2.0V.
43	CHANGE OF 0.5% OR GREATER TOLERANCE.
44	CHANGED IN IV CHARACTERISTICS WITH INPUTS HIGH.
45	CHECK FOR ANY CHANGE IN FORWARD VOLTAGE AND REVERSE LEAKAGE CURRENT.
46	CUMULATIVE LEAKAGE CURRENT.
47	D.C. PARAMETER OUT OF SPEC.
48	DAMAGE TO INPUT DIODE.
49	DEGRADATION OF V-I CURVE OR FUNCTIONAL FAILURE.
50	DEVICE CONSIDERED ESD SENSITIVE WHEN A 10%CHANGE IN ELECT. CHAR. WAS OBSERVED.
51	ELECTRICAL PARAMETERS OUT OF SPEC.
52	EXCESSIVE LEAKAGE CURRENT OR OPEN CONDUCTOR LINES.
53	FAILED THE DC ELECTRICAL PARAMETERS TEST LIMITS.

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Table 4 - FAILURE CRITERIA LISTING (Cont'd)

CODE FAILURE CRITERIA

- 54 FAILED VOLTAGE IS THE AVERAGE OF PARTS SAMPLED.
- 55 FAILS TO MEET ELECTRICAL SPECIFICATION.
- 56 FUNCTION FAILURE OR D.C. PARAMETER OUT OF SPEC.
- 57 FUNCTIONAL FAILURE.
- 58 GATE CURRENT GREATER THAN 5UA AT A GATE/SOURCE VOLTAGE OF 22 VOLTS.
- 59 GREATER THAN .5UA INPUT AT 10V.
- 60 GREATER THAN 1uA LEAKAGE CURRENT AT 1.5 VOLTS.
- 61 GREATER THAN 5uA LEAKAGE CURRENT AT 0.5 VOLTS.
- 62 ID= SHORT.
- 63 IDSS OUT OF SPEC.
- 64 IEB AT VEB= +6V +1000% CHANGE.
- 65 IEBO AT VEB= -6V +1000% CHANGE.
- 66 IEBO AT VEB= 2.5V +1000% CHANGE.
- 67 IEBO AT VEB= 3.5V 1000% CHANGE.
- 68 IF AC,DC,OR FUNCTIONAL PARAMETERS FAILS THE MIN. OR MAX. LIMITS.
- 69 IGSS AND V(BR)GSS OUT OF SPEC.
- 70 IGSS AT VGS= -20V +1000% CHANGE.
- 71 IGSS OUT OF SPEC.
- 72 IGSSR >25PA AT VGS= 8V AND VDS= 0V.
- 73 IGSSR AND IDSS OUT OF SPEC.
- 74 IGSSR AND VGS(TH) OUT OF SPEC.
- 75 IGSSR OUT OF SPEC.
- 76 IGSSR,VGS(TH) OR IDSS OUT OF SPEC.
- 77 IIH AND VR OUT OF SPEC.
- 78 IIH AND/OR VOL OUT OF SPEC.
- 79 IIH AND/OR VR OUT OF SPEC.
- 80 IIH OUT OF SPEC.
- 81 IIH, IIL, OR ISS OUT OF SPEC AT VDD=15V.
- 82 IIH,IIL,ISS OUT OF SPEC.
- 83 IIH,IIL,OR ISS OUT OF SPEC.
- 84 IIH,VF,OR VR OUT OF SPEC.
- 85 IIH= 10MA.
- 86 IIH= 16MA.
- 87 IIH= 97UA.
- 88 IIL OUT OF SPEC.
- 89 IL AT VR= .5V +300%.
- 90 IL AT VR= 50V +1000% CHANGE.
- 91 INPUT BREAKDOWN OF 5MV.
- 92 INPUT SHORTED TO VCC.
- 93 INPUTS SHORTED TO GROUND.
- 94 IR AND VB OUT OF SPEC.
- 95 IR GREATER THAN 100% CHANGE.
- 96 IR OUT OF SPEC.
- 97 IR= 300UA AT 50 VOLTS.
- 98 IZ AT VR= 5V +1000% CHANGE.
- 99 IZ AT VR= 6.5V +1000% CHANGE.
- 100 LEAKAGE CURRENT.
- 101 LIGHT OUTPUT DEGRADATION AT CONSTANT CURRENT.
- 102 N/R.
- 103 PARAMETER CHANGE OF GREATER THAN 10%.
- 104 PARAMETER SHIFT OF GREATER THAN 10%.
- 105 PASSED FUNCTIONALLY OR DC ELECTRICAL PARAMETERS.
- 106 RESISTANCE CHANGE OF 1%.

RAC ESD DATABASE

Table 4 - FAILURE CRITERIA LISTING (Cont'd)

<u>CODE</u>	<u>FAILURE CRITERIA</u>
107	RESISTANCE OUT OF SPEC.
108	SIGNIFICANT AMOUNT OF DEGRADATION TO V-I CURVE.
109	SIGNIFICANT CHANGE IN THE +INPUT -GROUND V-I CURVE.
110	STUDY OF BREAKDOWN CHARACTERISTIC OF INPUT AND OUTPUT PINS.
111	TEST LEAKAGE CURRENT.
112	TESTED TO 2000 VOLTS PER METHOD 3015.2 OF MIL-STD-883.
113	V(BR)GSS OUT OF SPEC.
114	VB OUT OF SPEC.
115	VEBO= IV. TYPICALLY 5 VOLTS.
116	VGS(OFF) OUT OF SPEC AND IGSSR >25PA AT VGS= 8V AND VDS= 0V.
117	VGS(OFF) OUT OF SPEC AND/OR IGSSR >25PA AT VGS= 8V AND VDS= 0V.
118	VGS(OFF) OUT OF SPEC AT VDS= 15V AND ID= 50UA.
119	VGS(TH) AND IDSS OUT OF SPEC.
120	VGS(TH) OUT OF SPEC.
121	VR OUT OF SPEC.
122	WHEN ONE PULSE RESULTED IN DECREASE REV. LEAKAGE OR DECREASE IN JUNC. BRKDN. VOLT.
123	WHEN ONE PULSE RESULTED IN INCREASE REV. LEAKAGE OR DECREASE IN JUNC. BRKDN. VOLT.

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Table 5 - TEST REMARKS LISTING

<u>CODE</u>	<u>TEST REMARKS</u>
1	1-DEV. IR SHORT, 3-100% CHANGE, 1-25% CHANGE, 5- NO CHANGE. 5 PULSES FWD & REV.
2	1.13M OHM MODEL.
3	1.1M OHM MODEL.
4	1.21M OHM MODEL.
5	1.58M OHM MODEL.
6	1.69M OHM MODEL.
7	1.78M OHM MODEL.
8	10 MHZ CRYSTAL OSCILLATOR.
9	10 OHM MODEL.
10	10000 VOLTS IS AN AVERAGE OF AN UNKNOWN NUMBER OF DEVICES.
11	107 OHM MODEL.
12	11.8 OHM MODEL.
13	12 MHZ CRYSTAL OSCILLATOR.
14	133K OHM MODEL.
15	1400 VOLTS IS AN AVERAGE OF 3 DEVICES.
16	140K OHM MODEL.
17	15 MHZ CRYSTAL OSCILLATOR.
18	150K OHM MODEL.
19	16 MHZ CRYSTAL OSCILLATOR.
20	1625 VOLTS IS AN AVERAGE OF AN UNKNOWN NUMBER OF DEVICES.
21	16300 VOLTS IS AN AVERAGE OF AN UNKNOWN NUMBER OF DEVICES.
22	1900 VOLTS IS AN AVERAGE OF AN UNKNOWN NUMBER OF DEVICES.
23	1M OHM MODEL.
24	2 DEVICES INCREASED IR FROM .09, .095 TO .85, .65uA. 5 PULSES FWD & REVERSE.
25	2 OUT OF 9 DEVICES TESTED FAILED.
26	2.1M OHM MODEL.
27	2.49M OHM MODEL.
28	2.6% OF TOTAL NUMBER OF PINS FAILED.
29	2.94M OHM MODEL.
30	20.5 OHM MODEL.
31	220 OHM MODEL.
32	232K OHM MODEL.
33	24.9 OHM MODEL.
34	240K OHM MODEL.
35	250 OHM MODEL.
36	250K OHM MODEL.
37	27.2% OF TOTAL NUMBER OF PINS FAILED.
38	270K OHM MODEL.
39	294K OHM MODEL.
40	297K OHM MODEL.
41	3.01M OHM MODEL.
42	301 OHM MODEL.
43	3200 VOLTS IS AN AVERAGE OF AN UNKNOWN NUMBER OF DEVICES.
44	330 OHM MODEL.
45	360.1K OHM MODEL.
46	38/PIN DEVICE CMOS, GATE ARRAY, SEMICUSTOM, MONOLITHIC.
47	383 OHM MODEL.
48	392K OHM MODEL.
49	4.37 OHM MODEL.
50	4.7% OF TOTAL NUMBER OF PINS FAILED.
51	400K OHM MODEL.
52	450 VOLTS IS AN AVERAGE OF AN UNKNOWN NUMBER OF DEVICES.
53	47.5 OHM MODEL.

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Table 5 - TEST REMARKS LISTING (Cont'd)

CODE	TEST REMARKS
54	475 VOLTS IS AN AVERAGE OF AN UNKNOWN NUMBER OF DEVICES.
55	475K OHM MODEL.
56	49.9 OHM MODEL.
57	499 OHM MODEL.
58	5 PULSES APPLIED AT BOTH FORWARD AND REVERSE POLARITIES.
59	5 PULSES FORWARD, 5 PULSES REVERSE.
60	5 PULSES PER POLARITY. DEVICES HAD METAL LID.
61	50 OHM MODEL.
62	50% FAILURE RATE WITH ARCING BETWEEN LEADS.
63	5000 VOLTS IS AN AVERAGE OF AN UNKNOWN NUMBER OF DEVICES.
64	511K OHM RESISTOR.
65	5500 VOLTS IS AN AVERAGE OF AN UNKNOWN NUMBER OF DEVICES.
66	57.6 OHM MODEL.
67	590 OHM MODEL.
68	600 VOLTS IS AN AVERAGE OF AN UNKNOWN NUMBER OF DEVICES.
69	604K OHM MODEL.
70	665K OHM MODEL.
71	7 OUT OF 10 DEVICES FAILED COLLECTOR TO BASE.
72	768K OHM MODEL.
73	7800 VOLTS IS AN AVERAGE OF AN UNKNOWN NUMBER OF DEVICES.
74	850 VOLTS IS AN AVERAGE OF AN UNKNOWN NUMBER OF DEVICES.
75	ALL 10 INPUTS FAILED TO VSS AT 800 VOLTS.
76	ALL UNUSED INPUTS AT 5.5 VOLTS.
77	ALL UNUSED INPUTS AT GROUND.
78	ALSO DEGRADATION FROM COMMON TO OUTPUT OF 4000 VOLTS.
79	ALSO FAILED 4,5,7-13 TO VDD AT 500 VOLTS.
80	ALSO FAILED FROM 5,6 & 7 TO VSS AT 800 VOLTS.
81	ALSO FAILED FROM ALL OTHER INPUTS TO VSS AT 800 VOLTS.
82	ALSO FAILED FROM INPUT PINS 5,6,8-13 TO VSS AT 800 VOLTS.
83	ALSO FAILED FROM PIN 7 TO OUTPUT AT 1000 VOLTS.
84	ALSO FAILED FROM PINS 4-8 AND 11-13 TO VSS AT 800 VOLTS.
85	ALSO FAILED FROM PINS 5,6,7,11 TO VDD AT 1000 VOLTS.
86	ALSO FAILED FROM PINS 5-13 TO VSS AT 800 VOLTS.
87	ALSO FAILED FROM PINS 8-13 TO VSS AT 800 VOLTS.
88	ALSO FAILED PIN 12 TO VDD AT 500 VOLTS.
89	ALSO FAILED PIN 4 TO VDD, 5-7,9-13 TO OUTPUT AT 500 VOLTS
90	ALSO FAILED PIN 9 TO OUTPUT AT 800 VOLTS.
91	ALSO FAILED PIN 9 TO VDD AND 8 TO OUTPUT AT 1000 VOLTS.
92	ALSO FAILED PIN 9 TO VSS AT 800 VOLTS.
93	ALSO FAILED PINS 4,5 & 9 TO VSS AT 800 VOLTS.
94	ALSO FAILED PINS 5 AND 10 TO VDD AT 800 VOLTS.
95	ALSO FAILED PINS 5-13 TO OUTPUT AT 500 VOLTS
96	ALSO FAILED PINS 5-13 TO VSS AT 800 VOLTS
97	ALSO INPUT TO GND DEGRADED AT 1800 VOLTS.
98	ALSO SHOWED DEGRADATION ON INPUT TO INPUT AT 2000 VOLTS.
99	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 1000V.
100	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 1020V.
101	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 1025V.
102	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 1060V.
103	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 1070V.
104	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 1080V.
105	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 1100V.
106	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 1125V.

RAC ESD DATABASE

Table 5 - TEST REMARKS LISTING (Cont'd)

<u>CODE</u>	<u>TEST REMARKS</u>
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107	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 1170V.
108	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 1200V.
109	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 1310V.
110	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 1325V.
111	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 1350V.
112	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 1360V.
113	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 1600V.
114	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 1675V.
115	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 1700V.
116	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 1750V.
117	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 2300V.
118	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 2400V.
119	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 2450V.
120	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 2500V.
121	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 2600V.
122	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 2700V.
123	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 2900V.
124	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 3000V.
125	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 3200V.
126	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 3444V.
127	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 3500V.
128	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 3550V.
129	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 3700V.
130	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 3760V.
131	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 3800V.
132	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 3900V.
133	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 4550V.
134	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 5200V.
135	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 550V.
136	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 600V.
137	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 700V.
138	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 725V.
139	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 750V.
140	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 800V.
141	AVERAGE FAILURE VOLTAGE FOR ALL PINS IS 850V.
142	AVG OF ALL INPUTS 940V, PINS 1,2,15 MOST SUSCEPTIBLE.
143	AVG OF ALL INPUTS 960V, PIN 15 MOST SUSCEPTIBLE.
144	AVG OF ALL INPUTS 960V, PINS 11,14 MOST SUSCEPTIBLE.
145	BOTH POLARITIES WERE TESTED.
146	BREAKDOWN VOLTAGE CHARACTERISTICS WERE DEGRADED.
147	CARRY LOOK AHEAD GENERATOR.
148	CATASTROPHIC FAILURES OBSERVED ARE DUE TO EMIT. CONTACT PENETRATING THE SILICON.
149	CHARGED DEVICE MODEL.
150	COLLECTOR TO BASE FOUND TO BE MOST SENSITIVE (BOTH POLARITIES).
151	COMMON TO OUTPUT SHOWED DEGRADATION AT 4000 VOLTS.
152	CRYSTAL (4 Mhz).
153	DAMAGE OBSERVED AT -700 VOLTS, FAILED AT 1100 VOLTS.
154	DAMAGE OBSERVED AT 1000 VOLTS, ALL PINS FAILED AT OR BEFORE 3500 VOLTS.
155	DAMAGE OBSERVED AT 1050 VOLTS, ALL INPUT PINS FAILED AT OR BEFORE 2000 VOLTS.
156	DAMAGE OBSERVED AT 150 VOLTS, ALL DEVICES FAILED AT OR BEFORE 400 VOLTS.
157	DATE CODE TESTED WERE BETWEEN 8134 TO 8715.
158	DEGRADATION OCCURRED AT 1000V.
159	DEGRADATION OCCURRED AT 1500V.

RAC ESD DATABASE

Table 5 - TEST REMARKS LISTING (Cont'd)

CODE	TEST REMARKS
160	DEGRADATION OCCURRED AT 2000V.
161	DEGRADATION OCCURRED AT 3000V.
162	DEGRADATION OCCURRED AT 3500V.
163	DEGRADATION OCCURRED AT 4500V.
164	DEGRADATION OCCURRED AT THE APPLIED VOLTAGE.
165	DELAY LINE, PULSE, ELECTROMAGNETIC, LUMPED CONSTANT, 16 PIN DIP.
166	DEVICE PASSED THE REVERSE V-I CURVE AFTER TESTING.
167	DIFFERENT PIN COMB. TESTED AT EACH VOLTAGE STEP.
168	DRIVER / RECEIVER.
169	DUAL PNP TRANSISTOR.
170	EACH PIN STRESSED WITH ALL OTHER PINS CONNECTED TO GROUND.
171	EACH PIN TESTED TO ALL OTHERS TIED TOGETHER.
172	EMITTER TO BASE FAILED AT 3500 VOLTS.
173	FAILED FROM PINS 4,8,13 TO VDD AND 10 TO OUTPUT AT 500 V.
174	FAILED INPUTS TO GND. VOLT IS AVG. OF 4 DEV. MEAN ENGY=16UJ.
175	FAILED PIN 13 TO VDD AT 500 V, 8 TO VSS, 6 TO VDD AT 800 V.
176	FAILED PIN 16 TO VDD AT 500 V & PIN 5 TO VSS AT 800 V.
177	FAILED PINS 13 TO VDD AND PIN 4 TO OUTPUT AT 800 VOLTS.
178	FAILED PINS 5-6,11-13 TO VSS 7 TO VDD & 8-10 TO OUTPUT 500V.
179	FAILED PINS 5-7,9,11 TO VSS 8,10,12 TO VDD AT 500 VOLTS.
180	FAILED PINS 5-8 & 10-13 TO VSS & PIN 9 TO VDD AT 500 VOLTS.
181	FAILED PINS 5-8 & 10-13 TO VSS AT 500V & 9 TO VSS AT 800 V.
182	FAILED PINS 8,13 TO VSS, 15 TO VSS AND 6 TO VDD, ALL AT 800V.
183	FAILED PINS 8-13 TO VSS AT 300V & PINS 4,6 TO OUTPUT AT 500V
184	FAILURE VOLTAGE FROM EMP DATA & WUNSCH MODEL. (SUPERSAP 2).
185	FAILURE VOLTAGE GIVEN IS APPROXIMATE VALUE ONLY.
186	FAILURE VOLTAGE IS AN AVERAGE OF 15 DEVICES.
187	FAILURE VOLTAGE IS AN AVERAGE.
188	FAILURE VOLTAGE OBTAINED FROM EMP DATA AND EXPONENTIAL MODEL.
189	FAILURE VOLTAGE OBTAINED FROM EMP DATA AND WUNSCH MODEL.
190	FAILURE VOLTAGE OBTAINED FROM EMP DATA.
191	FAILURES WERE DUE TO INCREASED CONTACT RESISTANCE.
192	FIVE PULSES BOTH POLARITY ACROSS EACH PIN COMBINATION.
193	FREQUENCY SYNTHESIZER.
194	HEX SCHMIDT TRIGGER.
195	HYBRID, OSCILLATOR.
196	IMCS TO >17.5KV, PAL TESTER TO >43KV. PAL IS A MOTOROLA IN HOUSE BUILT TESTER.
197	IN MOST FAILURES, Vos STARTS FAILING FIRST. THEN, Ios, IB, AND Icc.
198	INITIAL IGSS IS 0.1uA AND FINAL IGSS IS 10uA.
199	INITIAL IGSS IS 3.8uA AND FINAL IGSS IS 10uA.
200	INITIAL IGSS WAS 0.1uA AND FINAL IGSS WAS 1.0uA.
201	INITIAL IGSS WAS 0.1uA AND THE FINAL IGSS WAS 0.7uA.
202	INITIAL IGSS WAS 1.0uA AND FINAL IGSS WAS 3.4uA.
203	INITIAL IGSS WAS 1uA AND FINAL IGSS WAS 10uA.
204	INPUT AND CLAMPING DIODES WERE TYPICAL FAILURES.
205	INPUT FAILED AT 2500 AND 3000 VOLTS, OUTPUT DID NOT FAIL.
206	INPUT PIN 1 FAILED AT 200V AND INPUT PIN 8 FAILED AT 300V.
207	INPUT PIN 1 FAILED AT 200V AND INPUT PIN 8 FAILED AT 400V.
208	INPUT PIN 1 FAILED AT 200V.
209	INPUT PIN 1 FAILED AT 300V.
210	INPUT PIN 1 FAILED AT 400V AND INPUT PIN 8 FAILED AT 500V.
211	INPUT PIN 1 FAILED AT 500V.
212	INPUT PIN 10 FAILED AT 300V.

RAC ESD DATABASE

Table 5 - TEST REMARKS LISTING (Cont'd)

CODE	TEST REMARKS
213	INPUT PIN 2 FAILED AT 200V.
214	INPUT PIN 2 FAILED AT 300V.
215	INPUT PIN 2 FAILED AT 400V.
216	INPUT PIN 2 FAILED AT 500V.
217	INPUT PIN 7 FAILED AT 200V.
218	INPUT PIN 8 FAILED AT 400V.
219	INPUT PIN 9 FAILED AT 400V.
220	INPUT PINS 1 AND 8 FAILED AT 300V.
221	INPUT PINS 1 AND 8 FAILED AT 400V.
222	INPUT PINS 1 AND 8 FAILED AT 500V.
223	INPUT PINS 1 AND 9 FAILED AT 200V.
224	INPUT PINS 11 AND 15 FAILED AT 200V.
225	INPUT PINS 2 AND 10 FAILED AT 200V.
226	INPUT PINS 2 AND 6 FAILED AT 200V.
227	INPUT PINS 2 AND 6 FAILED AT 300V.
228	INPUT PINS 7 AND 15 FAILED AT 300V.
229	INPUT TO COM. 3000 V, OUTPUT TO COMMON FAIL AT 1600 VOLTS.
230	INPUT TO OUTPUT DEGRADATED AT 600 VOLTS.
231	INPUTS STRESSED NO PINS GND CAP. OF PACKAGE TO GND IS 290PF.
232	INPUTS STRESSED NO PINS GND CAP. OF PACKAGE TO GND IS 3.5PF.
233	INPUTS STRESSED NO PINS GND CAP. OF PACKAGE TO GND IS 37PF.
234	INPUTS STRESSED NO PINS GND CAP. OF PACKAGE TO GND IS 3PF.
235	INPUTS STRESSED NO PINS GND CAP. OF PACKAGE TO GND IS 6.5PF.
236	INTEL METHOD.
237	INTEL MODEL.
238	IR CHANGED FROM .045uA TO 22.JuA ON ONE DEVICE. 5 PULSES FORWARD AND REVERSE.
239	IR CHANGED FROM .103uA, 200V TO .4uA, 80 VOLTS. 5 PULSES FORWARD & REVERSE.
240	IR DOUBLED AFTER 400 VOLTS, SHORTED AFTER 500 VOLTS.
241	IR INCREASED FROM .05uA TO 148uA. 5 PULSES FORWARD, 5 PULSES REVERSE.
242	IR INCREASED FROM .19MA TO .23MA. 5 PULSES FORWARD, 5 PULSES REVERSE.
243	IR INCREASED ON 3 DEVICES; 5.4 TO 6.2uA, 3.7 TO 4.1uA, AND 4.6 TO 5.6uA.
244	JUNCTION IS DAMAGED BEFORE DEVICE FAILS ELECTRICALLY.
245	LED DEVICES WHICH HAVE REV BRKDNW DAMAGE CAUSED BY ESD MAY FUNC NORM IN FWD DIR.
246	MICROCONTROLLER.
247	MIL-STD-883B METHOD 3015 (CAT B), DEVICE PASSED 2000V TEST.
248	MINIMUM OBSERVED DAMAGE WAS 200 VOLTS ALL DEVICES FAILED AT OR BELOW 300 VOLTS.
249	MINIMUM OBSERVED DAMAGE WAS 500 VOLTS ALL INPUT PINS FAILED AT OR BEFORE 700 V.
250	MINIMUM OBSERVED WAS 2600 VOLTS, ALL DEVICES FAILED AT OR BEFORE 3000 VOLTS.
251	MODULATOR.
252	N/R.
253	NO DEGRADATION TO OUTPUT AT 4000 VOLTS.
254	NO DEGRADATION TO OUTPUT PINS.
255	NO FAILURES OBSERVED GATE TO CATHODE.
256	OF 4 DEVICES FAILURE VOLTAGE WAS FROM 1400V TO 6000 VOLTS.
257	OF THE FOUR DEVICES TESTED TWO DEVICE DATE CODES WERE GIVEN AS 8615 AND 8501.
258	ONE DEVICE IR SHORTED. 5 PULSES FORWARD, 5 PULSES REVERSE.
259	OTHER PINS OPEN.
260	OTHER PINS TIED TO GND.
261	PAL TESTER IS A MOTOROLA IN HOUSE BUILT IMCS TO >17.5KV, PAL TO >43KV.
262	PIN UNDER TEST STRESSED WITH ALL OTHERS TIED TOGETHER FLOATING.
263	PINS 1 AND 2 FAILED AT 1100 VOLTS.
264	PINS 11-14 TO VSS, 15 TO VDD AT 800V, 8, 13 TO OUTPUT AT 1000V.
265	PINS 13 TO VSS, 9 TO VSS AT 1000V, 8 TO VDD AT 1000 VOLTS.

RAC ESD DATABASE

Table 5 - TEST REMARKS LISTING (Cont'd)

<u>CODE</u>	<u>TEST REMARKS</u>
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266	PINS 3,4,5, AND 22 FAILED AT 1200 VOLTS.
267	PINS 8-15 TO VSS AT 500V, 11 TO OUTPUT AT 500 VOLTS.
268	PINS THAT FAILED 3,6-8,11,14,15,17-21, AND 23.
269	PRECISION MOTION CONTROLLER.
270	PROGRAMMABLE BAND PASS FILTER.
271	PROGRAMMABLE INTERVAL TIMER.
272	QUAD DEVICE, ONE DIODE PER DEVICE TESTED.
273	SEMI-CUSTOM GATE ARRAY.
274	SERIAL INPUT PLL FREQUENCY SYNTHESIZER.
275	TEST PREPARED AT 25 DEGREES C.
276	THE MOST SENSITIVE PIN TESTED IS B.
277	THE MOST SENSITIVE PIN TESTED IS G.
278	THE MOST SENSITIVE PINS TESTED ARE C TO B.
279	THE MOST SENSITIVE PINS TESTED ARE C TO E.
280	THE MOST SENSITIVE PINS TESTED ARE E TO B.
281	THE MOST SENSITIVE PINS TESTED ARE G AND D TO S.
282	THE MOST SENSITIVE PINS TESTED ARE S AND D TO G.
283	THE MOST SENSITIVE PINS TESTED ARE S AND G TO D.
284	VOLTAGE IS AN AVERAGE OF 12 RESISTORS. MEAN ENERGY OF 48UJ.
285	VOLTAGE IS AN AVERAGE OF 4 DEVICES.
286	VOLTAGE IS AN AVERAGE OF ALL INPUTS.
287	WORST CASE PINS (+) 1-4,9,10,20,23-27(-)1,10.LOT # (413,410-1).
288	WORST CASE PINS (+) 4-6,22,23,25-27 (-) 20,21. LOT # (284/006,285/008,416-3).
289	ZERO OHMS MODEL.

RAC ESD DATABASE

Table 6 - GENERAL REMARKS LISTING

CODE	GENERAL REMARKS
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1	5 PULSES +/-.
2	ALL PINS BUT PIN UNDER TEST CONNECTED TO GND VIA RESISTOR. VDD AND VSS GROUNDED.
3	BEGIN WITH 200V, INCR. 100V TO 1000V, INCR. 200V TO 2000V, INCR 500V TO 4000V.
4	CHARGED DEVICE MODEL.
5	DATA OBTAINED FROM WEIBULL PLOTS. STEPS WERE 20% OF AN UNKNOWN STARTING VOLTAGE.
6	DEVICE PASSED REVERSE V-I CURVE. FORWARD AND REVERSE POLARITY TESTED.
7	FAILED VOLTAGE IS THE AVERAGE OF PARTS SAMPLED.
8	FAILURE VOLTAGE OBTAINED FROM EMP DATA AND EXPONENTIAL MODEL.
9	FAILURE VOLTAGES GIVEN ARE VOLTAGE TO CAUSE 30% FAILURE. DETAILS UNKNOWN.
10	IMCS TESTER TO >17.5KV, PAL TESTER TO >43KV. ONE PULSE PER VOLTAGE INCREMENT.
11	IN ACCORDANCE WITH MIL-STD-883B METHOD 3015 (CAT B), DEVICE PASSED 2000V TESTING.
12	MODEL 900.
13	N/R.
14	PIN COMBINATIONS AND POLARITY DIFFER FOR EACH OF THE FOUR PULSES.
15	PIN UNDER TEST STRESSED WITH ALL OTHER PINS TIED TOGETHER GROUNDED.
16	PIN UNDER TEST STRESSED WITH ALL OTHER PINS.
17	START 100V WITH INCREMENTS OF 100V TO 1000V. THEN INCREMENTS OF 250V TO FAILURE.
18	STEP STRESS TEST WAS PERFORMED HOWEVER ACTUAL VOLTAGE STEPS WERE UNKNOWN.
19	STEPPED FROM 1800 VOLTS TO FAILURE IN 25 VOLT INCREMENTS.
20	STEPPED IN 100 VOLT INCREMENTS STARTING AT 400 VOLTS.
21	STEPPED IN 2.5 VOLT INCREMENTS.
22	STEPPED IN 25 VOLT INCREMENTS.
23	STRESSED IN INCREMENTS OF 20% STARTING AT 16V FOR MOS DEVICES AND 70V FOR OTHERS.
24	TEST VOLTAGE WAS INCREMENTED FROM 100V TO 5500V IN 100V STEPS.
25	TESTED TO 2000 VOLTS PER METHOD 3015.2 OF MIL-STD-883.
26	TESTER IS A MARTIN MARIETTA IN HOUSE BUILT.
27	THERE WERE ALSO 100V INCREMENTS STEPPED FROM 100V TO 800V.
28	VOLT INCREMENTS AS FOLLOWS:100V TO 1KV,250V TO 3KV,500V TO 6KV,AND 1KV TO 16KV.
29	VOLTAGE STEP LEVELS 100 VOLT INCREMENTS UP TO 4000 VOLTS.

SECTION 3.2

DISCRETE SEMICONDUCTOR SUSCEPTIBILITY TEST DATA

RAC ESD Database

Part Number	Part		Part ESD		Description										Technology				
	Mfr	Class	Test	Type	Resistance	Capacitance	Pulses	Code	Number	Date	Devices	Test	Result	Voltage	Pin	Combination	Failure Criteria	Test Remarks	General Remarks
04-92	NSC	2	Transistor, Low Power, NPN																
			421	0184	SS	1500	Ohms	100E-12	F	10	N/R	1	PASSED	2000	N/R	102	252	13	
06-92	NSC	2	Transistor, Multiple, Darlington																
	421	0184	SS	1500	Ohms	100E-12	F	10	N/R	1	PASSED	2000	N/R	102	252	13			
10070019-106	UDT	3	Diode, Rectifier, High Voltage																
	436	1186	SS	1500	Ohms	100E-12	F	18	N/R	4	PASSED	4000	N/R	5	252	3			
13-92	NSC	2	Transistor, Low Power, NPN																
	421	0184	SS	1500	Ohms	100E-12	F	10	N/R	1	PASSED	2000	N/R	102	252	13			
1N1095	TEX	3	Diode, Rectifier, High Power																
	029	N/R	N/R	1500	Ohms	100E-12	F	1	N/R	1	FAILED	12868	N/R	102	189	13			
1N1124A	SYN	N	Thyristor, SCR																
	029	N/R	N/R	1500	Ohms	100E-12	F	1	N/R	1	FAILED	31200	N/R	102	188	13			
1N1126A	SYN	N	Thyristor, SCR																
	029	N/R	N/R	1500	Ohms	100E-12	F	1	N/R	1	FAILED	93741	N/R	102	189	13			
1N1202A	N/R	3	Diode, Rectifier, High Power																
	029	N/R	N/R	1500	Ohms	100E-12	F	1	N/R	1	FAILED	55813	N/R	102	188	13			

RAC ESD Database

Part Number	(Cont'd)	Part ESD		Part Description	Technology																			
		Mfr	Class		Test	Test Type	Resistance	Capacitance	Pulses	Number	Date	Code	Devices	Test Result	Test Voltage	Pin Combination	Failure Criteria	Test Remarks	General Remarks					
1N1202A					N/R	N/R	3	Diode, Rectifier, High Power													Not Applicable			
1N1202A					BEN	N	N	Diode, Rectifier, High Power														Not Applicable		
029					N/R	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	90397	N/R	102	189	13						
1N1204A					N/R	N	N	Diode, Rectifier, High Power														Not Applicable		
232					N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	108139	N/R	102	184	13						
1N1206					SYN	N	N	Diode, Rectifier, High Power														Not Applicable		
029					N/R	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	92874	N/R	102	189	13						
1N1614					N/R	N	N	Thyristor, SCR														Not Applicable		
029					N/R	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	70874	N/R	102	188	13						
1N1615					SYN	N	N	Thyristor, SCR														Not Applicable		
029					N/R	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	88705	N/R	102	189	13						
1N1733A					TRW	N	N	Diode, Rectifier, High Voltage														Not Applicable		
029					N/R	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	32958	N/R	102	189	13						
1N2158					SYN	N	N	Diode, Rectifier, High Power														Not Applicable		
029					N/R	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	146346	N/R	102	189	13						

RAC ESD Database

Part Number	Part ESD		Part		Technology	
	Mfr	Class	Description	Not Applicable	Not Applicable	Not Applicable
1N21B	ALP	1	Diode, Microwave			
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Voltage
	029	N/R	N/R	1500 Ohms	100E-12 F	1193 N/R
						102 189 13
1N21C	ALP	1	Diode, Microwave			
	029	N/R	N/R	1500 Ohms	100E-12 F	1550 N/R
						102 189 13
1N21E	ALP	1	Diode, Microwave			
	029	N/R	N/R	1500 Ohms	100E-12 F	1579 N/R
						102 189 13
1N21F	ALP	1	Diode, Microwave			
	029	N/R	N/R	1500 Ohms	100E-12 F	1334 N/R
						102 189 13
1N21WE	ALP	1	Diode, Microwave			
	029	N/R	N/R	1500 Ohms	100E-12 F	1266 N/R
						102 189 13
1N21WE	MAC	1	Diode, Microwave			
	394	0485 SS	1500 Ohms	100E-12 F		400 N/R
						95 240 29
1N23B	ALP	1	Diode, Microwave			
	029	N/R	N/R	1500 Ohms	100E-12 F	1193 N/R
						102 189 13
1N23D	ALP	1	Diode, Microwave			
	029	N/R	N/R	1500 Ohms	100E-12 F	1033 N/R
						102 189 13

RAC ESD Database

Part Number	Part ESD			Part Description	Technology													
	Mfr	Class	1		Test					Test					Failure Test			General Remarks
					Source	Date	Type	Resistance	Capacitance	Number	Date	Code	Devices	Test Result	Voltage	Pin	Combination	
1N23E	ALP		1	Diode, Microwave	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	1550 N/R	102	189	13	
1N23F	ALP		1	Diode, Microwave	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	943 N/R	102	189	13	
1N23G	ALP		1	Diode, Microwave	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	870 N/R	102	189	13	
1N23RF	ALP		1	Diode, Microwave	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	915 N/R	102	189	13	
1N23WE	ALP		1	Diode, Microwave, Point Contact	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	508 N/R	102	189	13	
1N23WE	N/R		1	Diode, Microwave, Point Contact	026	0178 SS	100 Ohms	200E-12 F	1	N/R	4	FAILED	56 C(+) A(-)	89	285		13	
1N25	ALP		3	Diode, Microwave	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	4812 N/R	102	189	13	
1N251	ALP		2	Diode, Small Signal, General Purpose	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	2233 N/R	102	189	13	

RAC ESD Database

Part Number	Part ESD		Part	Technology								
	Mfr	Class		Description	Not Applicable							
1N253	TRC	N	Thyristor, SCR									
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Number	Test Result	Test Voltage	Test Pin Combination	Failure Criteria	Test Remarks	General Remarks
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	23347	N/R	102	189	13
1N25A	ALP	2	Diode, Microwave							Not Applicable		
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	3402	N/R	102	189	13
1N2701	11T	2	Diode, Rectifier, High Power							Not Applicable		
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	2624	N/R	102	189	13
1N277	N/R	1	Diode, Small Signal, General Purpose							Not Applicable		
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	1792	N/R	102	189	13
1N2804B	N/R	3	Diode, Zener, Voltage Regulator							Not Applicable		
	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 PASSED	15300	N/R	103	252	13
1N2813B	N/R	3	Diode, Zener, Voltage Regulator							Not Applicable		
	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 PASSED	15300	N/R	103	252	13
1N2816B	N/R	3	Diode, Zener, Voltage Regulator							Not Applicable		
	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 PASSED	15300	N/R	103	252	13
1N2818	MOT	N	Diode, Zener, Voltage Regulator							Not Applicable		
	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED	43000	ANODE TO CATHODE		123	0	10

RAC ESD Database

Part Number	Part ESD		Part Description	Technology			
	Mfr	Class		Test	Test	Test	General
1N2831	MOT	N	Diode, Zener, Voltage Regulator	Test Date	Test Type	Test Result	Failure Criteria
	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED	123 0 10
1N2837	MOT	N	Diode, Zener, Voltage Regulator	Test Date	Test Type	Test Result	Failure Criteria
	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED	123 0 10
1N2846	MOT	N	Diode, Zener, Voltage Regulator	Test Date	Test Type	Test Result	Failure Criteria
	400	1287 SS	1500 Ohms	100E-12 F	400 N/R	10 FAILED	122 0 10
1N2892	MOT	N	Diode, Zener, Voltage Regulator	Test Date	Test Type	Test Result	Failure Criteria
	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED	123 0 10
1N2929A	CEN	3	Diode, Microwave, Tunnel	Test Date	Test Type	Test Result	Failure Criteria
	029	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	102 189 13
1N29708	CEN	N	Diode, Zener, Voltage Regulator	Test Date	Test Type	Test Result	Failure Criteria
	029	N/P	1500 Ohms	100E-12 F	1 N/R	1 FAILED	102 189 13
1N29848	CEN	N	Diode, Zener, Voltage Regulator	Test Date	Test Type	Test Result	Failure Criteria
	029	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	102 189 13
1N29858	CEN	N	Diode, Zener, Voltage Regulator	Test Date	Test Type	Test Result	Failure Criteria
	029	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	102 189 13

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Part Number	Part ESd		Part Description											Technology	
	Mfr Class	Class		Test Type	Test Resistance	Test Capacitance	Test Pulses	Test Date Code	Test Number Devices	Test Result	Test Voltage	Test Pin Combination	Failure Criteria	Test Remarks	General Remarks
1N2985RB	MOT	N	Diode, Zener, Voltage Regulator	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	152760 N/R	102	189	13	
1N2988B	CEN	N	Diode, Zener, Voltage Regulator	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	155728 N/R	102	189	13	
1N2989B	N/R	N	Diode, Zener, Voltage Regulator	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	161151 N/R	102	189	13	
1N2991B	CEN	N	Diode, Zener, Voltage Regulator	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	176527 N/R	102	189	13	
1N3015B	CEN	N	Diode, Zener, Voltage Regulator	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	191984 N/R	102	188	13	
1N3017B	CEN	N	Diode, Zener, Voltage Regulator	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	96791 N/R	102	189	13	
1N3019B	CEN	N	Diode, Zener, Voltage Regulator	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	154045 N/R	102	189	13	
1N3020	MOT	N	Diode, Zener, Voltage Regulator	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED	43000 ANODE TO CATHODE	Not Applicable	123	0	10	

RAC ESD Database

Part Number	Part ESD		Part Description	Technology			
	Mfr	Class		Not Applicable			
1N3022	MOT	N	Diode, Zener, Voltage Regulator				
	Test Date	Test Type	Test Resistance	Test Capacitance	Number Pulses	Date Code	Test Result
	400	0188 SS	1500 Ohms	100E-12 F	400	N/R	10 PASSED
							43000 ANODE TO CATHODE
							123 0 10
1N3022B	N/R	N	Diode, Zener, Voltage Regulator				Not Applicable
029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1 FAILED 110268 N/R 102 189 13
1N3023	MOT	N	Diode, Zener, Voltage Regulator				Not Applicable
400	0188 SS	1500 Ohms	100E-12 F	400	N/R	10 PASSED	123 0 10
1N3024	MOT	N	Diode, Zener, Voltage Regulator				Not Applicable
400	1287 SS	1500 Ohms	100E-12 F	400	N/R	10 PASSED	122 0 10
1N3025	MOT	N	Diode, Zener, Voltage Regulator				Not Applicable
400	1287 SS	1500 Ohms	100E-12 F	400	N/R	10 PASSED	122 0 10
1N3025B	N/R	3	Diode, Zener, Voltage Regulator				Not Applicable
030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1 FAILED 15000 N/R 103 252 13
1N3026	MOT	N	Diode, Zener, Voltage Regulator				Not Applicable
400	0188 SS	1500 Ohms	100E-12 F	400	N/R	10 PASSED	123 0 10
1N3027	MOT	N	Diode, Zener, Voltage Regulator				Not Applicable
400	0188 SS	1500 Ohms	100E-12 F	400	N/R	10 PASSED	123 0 10

RAC ESD Database

Part Number	Part ESD		Part Description	Test				Technology	
	Mfr	Class		Test Date	Type	Resistance	Capacitance	Number	Test
1N3028	MOT	N	Diode, Zener, Voltage Regulator	0188	SS	1500 Ohms	100E-12 F	400	N/R
				400				10	PASSED
								43000	ANODE TO CATHODE
								123	0
								10	10
1N3030	MOT	N	Diode, Zener, Voltage Regulator	0188	SS	1500 Ohms	100E-12 F	400	N/R
				400				10	PASSED
								43000	ANODE TO CATHODE
								123	0
								10	10
1N3031B	N/R	N	Diode, Zener, Voltage Regulator	029	N/R	1500 Ohms	100E-12 F	1	N/R
				400				1	FAILED
								156428	N/R
								102	189
								13	13
1N3032	MOT	N	Diode, Zener, Voltage Regulator	0188	SS	1500 Ohms	100E-12 F	400	N/R
				400				10	PASSED
								43000	ANODE TO CATHODE
								123	0
								10	10
1N3034	MOT	N	Diode, Zener, Voltage Regulator	0188	SS	1500 Ohms	100E-12 F	400	N/R
				400				10	PASSED
								43000	ANODE TO CATHODE
								123	0
								10	10
1N3035B	CEN	N	Diode, Zener, Voltage Regulator	029	N/R	1500 Ohms	100E-12 F	1	N/R
				400				1	FAILED
								194957	N/R
								102	188
								13	13
1N3037	MOT	N	Diode, Zener, Voltage Regulator	0188	SS	1500 Ohms	100E-12 F	400	N/R
				400				10	PASSED
								43000	ANODE TO CATHODE
								123	0
								10	10
1N3037B	CEN	N	Diode, Zener, Voltage Regulator	029	N/R	1500 Ohms	100E-12 F	1	N/R
				400				1	FAILED
								202154	N/R
								102	189
								13	13

RAC ESD Database

Part Number	Part ESD		Part Description	Test				Technology	
	Mfr	Class		Test Date	Test Type	Resistance	Capacitance	Number	General
1N30408	CEN	N	Diode, Zener, Voltage Regulator	029	N/R	1500 Ohms	100E-12 F	1 N/R	102 189 13
1N3044	MOT	N	Diode, Zener, Voltage Regulator	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	102 189 13
1N30478	IRC	N	Diode, Zener, Voltage Regulator	029	N/R	1500 Ohms	100E-12 F	1 N/R	102 189 13
1N3048	MOT	N	Diode, Zener, Voltage Regulator	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	102 189 13
1N3049	MOT	N	Diode, Zener, Voltage Regulator	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	102 189 13
1N3064	N/R	3	Diode, Small Signal, General Purpose	029	N/R	1500 Ohms	100E-12 F	1 N/R	102 189 13
1N3064	RAY	N	Diode, Small Signal, General Purpose	029	N/R	1500 Ohms	100E-12 F	1 N/R	102 189 13
1N3154	MOT	N	Diode, Zener, Voltage Regulator	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	102 189 13

RAC ESD Database

Part Number	Part ESD		Part Description	Test																Technology		
	Mfr	Class		Test Date	Test Type	Resistance	Capacitance	Test Result	Number	Date	Code	Devices	Test Result	Voltage	Pin	Combination	Test Result	Test Voltage	Test Pin	Combination	Failure Criteria	Test Remarks
1N3155	N/R	3	Diode, Zener, Voltage Reference	030	N/R	N/R	1500 Ohms	100E-12 F	1 FAILED	1	N/R	1	15000 N/R	15000 N/R	15000 N/R	15000 N/R	15000 N/R	15000 N/R	15000 N/R	103	252	13
1N3157	DIC	N	Diode, Rectifier, High Voltage	029	N/R	N/R	1500 Ohms	100E-12 F	1 FAILED	1	N/R	1	185703 N/R	185703 N/R	185703 N/R	185703 N/R	185703 N/R	185703 N/R	185703 N/R	102	188	13
1N3157	MOT	N	Diode, Rectifier, High Voltage	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED	43000 ANODE TO CATHODE	43000 ANODE TO CATHODE	43000 ANODE TO CATHODE	43000 ANODE TO CATHODE	43000 ANODE TO CATHODE	43000 ANODE TO CATHODE	43000 ANODE TO CATHODE	43000 ANODE TO CATHODE	43000 ANODE TO CATHODE	123	0	10	
1N3189	GE	N	Diode, Rectifier, High Power	029	N/R	N/R	1500 Ohms	100E-12 F	1 FAILED	1	N/R	1	71986 N/R	71986 N/R	71986 N/R	71986 N/R	71986 N/R	71986 N/R	71986 N/R	102	189	13
1N3191	N/R	N	Diode, Rectifier, High Power	029	N/R	N/R	1500 Ohms	100E-12 F	1 FAILED	1	N/R	1	26595 N/R	26595 N/R	26595 N/R	26595 N/R	26595 N/R	26595 N/R	26595 N/R	102	188	13
1N33238	N/R	N	Diode, Zener, Voltage Regulator	232	N/R	N/R	N/R	Ohms	100E-12 F	1 FAILED	1	N/R	1	22943 N/R	22943 N/R	22943 N/R	22943 N/R	22943 N/R	22943 N/R	102	184	13
1N34A	N/R	1	Diode, Zener, Voltage Regulator	029	N/R	N/R	1500 Ohms	100E-12 F	1 FAILED	1	N/R	1	1672 N/R	1672 N/R	1672 N/R	1672 N/R	1672 N/R	1672 N/R	1672 N/R	102	189	13
1N3504	MSC	3	Diode, Zener	436	0588 SS	1500 Ohms	100E-12 F	6 PASSED	4000 N/R	4000 N/R	4000 N/R	4000 N/R	4000 N/R	4000 N/R	4000 N/R	4000 N/R	4000 N/R	4000 N/R	4000 N/R	5	252	3

RAC ESD Database

Part Number	Part ESD		Part Description	Technology	
	Mfr	Class		Failure Criteria	Test General Remarks
1N3595	FSC	3	Diode, Small Signal, General Purpose	Not Applicable	
	Test Date	Test Type	Test Resistance	Test Capacitance	Test Voltage
	029	N/R	N/R	1500 Ohms	100E-12 F
	436	1186 SS	1500 Ohms	100E-12 F	18 N/R
					13 PASSED
					4000 N/R
1N3595	N/R	3	Diode, Small Signal, General Purpose	Not Applicable	
	232	N/R	N/R	Ohms	100E-12 F
					1 N/R
					1 FAILED
					4440 N/R
1N3600	FSC	3	Diode, Small Signal, General Purpose	Not Applicable	
	029	N/R	N/R	1500 Ohms	100E-12 F
					1 N/R
					1 FAILED
					9476 N/R
					7312 N/R
1N3600	N/R	3	Diode, Small Signal, General Purpose	Not Applicable	
	029	N/R	N/R	1500 Ohms	100E-12 F
					1 N/R
					1 FAILED
					9558 N/R
	030	N/R	N/R	1500 Ohms	100E-12 F
					1 N/R
					1 FAILED
					9000 N/R
	232	N/R	N/R	Ohms	100E-12 F
					1 N/R
					1 FAILED
					2787 N/R
1N3600	VAR	3	Diode, Small Signal, General Purpose	Not Applicable	
	402	0887 SS	1500 Ohms	100E-12 F	5 N/R
					5 FAILED
					10000 N/R
1N3677	MOT	N	Diode, Zener, Voltage Regulator	Not Applicable	
	400	0188 SS	1500 Ohms	100E-12 F	400 N/R
					10 PASSED
					43000 ANODE TO CATHODE
					123
					0
					10

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Part Number	Part		Part ES D										Technology			
	Mfr	Class	Description		Test	Resistance	Capacitance	Pulses	Date Code	Number Devices	Test Result	Test Voltage	Pin Combination	Failure Criteria	Test Remarks	General Remarks
1N3684	MOT	N	Diode, Zener													
				Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test
				Source	Date	Type	SS	1500 Ohms	100E-12 F	400 N/R	10	PASSED	43000 ANODE TO CATHODE	123	0	10
1N3821	MOT	N	Diode, Zener, Voltage Regulator													
				400	0188	SS	1500 Ohms	100E-12 F	400 N/R	10	PASSED	43000 ANODE TO CATHODE		123	0	10
1N3821A	DIC	N	Diode, Zener, Voltage Regulator													
				029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1	FAILED	103218 N/R		102	189	13
1N3822	MOT	N	Diode, Zener, Voltage Regulator													
				400	0188	SS	1500 Ohms	100E-12 F	400 N/R	10	PASSED	43000 ANODE TO CATHODE		123	196	10
1N3823	MOT	N	Diode, Zener, Voltage Regulator													
				400	0188	SS	1500 Ohms	100E-12 F	400 N/R	10	PASSED	43000 ANODE TO CATHODE		123	0	10
1N3824	MOT	N	Diode, Zener, Voltage Regulator													
				400	0188	SS	1500 Ohms	100E-12 F	400 N/R	10	PASSED	43000 ANODE TO CATHODE		123	0	10
1N3826	MOT	N	Diode, Zener, Voltage Regulator													
				400	0188	SS	1500 Ohms	100E-12 F	400 N/R	10	PASSED	43000 ANODE TO CATHODE		123	0	10
1N3826A	MSC	3	Diode, Zener, Voltage Regulator													
				436	1186	SS	1500 Ohms	100E-12 F	18 N/R	5	PASSED	4000 N/R		5	252	3

RAC ESD Database

Part Number	Part ESD		Part Description	Test				Technology	
	Mfr	Class		Test	Number	Date	Test	Failure Criteria	General Remarks
1N3827	MOT	N	Diode, Zener, Voltage Regulator	Test Type Resistance 1500 Ohms	100E-12 F	400 N/R	10 PASSED	43000 ANODE TO CATHODE	123 0 10
1N3828	MOT	N	Diode, Zener, Voltage Regulator	Test Type Resistance 1500 Ohms	100E-12 F	400 N/R	10 PASSED	43000 ANODE TO CATHODE	123 0 10
1N3828A	N/R	N	Diode, Zener, Voltage Regulator	Test Type Resistance 1500 Ohms	100E-12 F	1 N/R	1 FAILED	92159 N/R	102 189 13
1N3891	MOT	N	Diode, Rectifier, Fast Recovery	Test Type Resistance 1500 Ohms	100E-12 F	400 N/R	10 PASSED	43000 ANODE TO CATHODE	123 0 10
1N3891	SCN	3	Diode, Rectifier, Fast Recovery	Test Type Resistance 1500 Ohms	100E-12 F	18 N/R	2 PASSED	4000 N/R	5 252 3
1N3893	SCN	3	Diode, Rectifier, Fast Recovery	Test Type Resistance 1500 Ohms	100E-12 F	18 N/R	5 PASSED	4000 N/R	5 252 3
1N3910	N/R	3	Diode, Rectifier, Fast Recovery	Test Type Resistance 1500 Ohms	100E-12 F	1 N/R	1 FAILED	12000 N/R	103 252 13

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Part Number	Part ESd		Part Description											Technology	
	Mfr Class	N		Diode, Rectifier, High Power									Not Applicable		
Test Source	Test Date	Test Type	Resistance	Capacitance	Test Result	Number Devices	Date Code	Pulses	Voltage	Pin Combination	Test Result	General Remarks			
													Failure Criteria	Test Remarks	General Remarks
1N4003	029	N/R	N/R	1500 Ohms	100E-12 F	1 FAILED	1 N/R	1 N/R	35426	N/R	102	189	13		
1N4004	N/R	N/R	3	Diode, Rectifier, High Power							Not Applicable				
	030	N/R	N/R	1500 Ohms	100E-12 F	1 FAILED	1 N/R	1 N/R	7000	N/R	103	252	13		
1N4005	MOT	N/R	2	Diode, Rectifier, High Power							Not Applicable				
	029	N/R	N/R	1500 Ohms	100E-12 F	1 FAILED	1 N/R	1 N/R	3697	N/R	102	188	13		
1N4006	MOT	N/R	3	Diode, Rectifier, High Power							Not Applicable				
	029	N/R	N/R	1500 Ohms	100E-12 F	1 FAILED	1 N/R	1 N/R	5369	N/R	102	188	13		
1N4007	MOT	N	N	Diode, Rectifier, High Power							Not Applicable				
	400	0188	SS	1500 Ohms	100E-12 F	10 PASSED	400 N/R	10	43000	ANODE TO CATHODE	123	0	10		
1N4099	N/R	3	Diode, Zener, Voltage Regulator								Not Applicable				
	232	N/R	N/R	N/R	Ohms	100E-12 F	1 N/R	1	7871	N/R	102	184	13		
	026	0178	SS	100 Ohms	200E-12 F	4 FAILED	1 N/R	4	6000	C(+) A(-)	99	285	13		
	402	0787	SS	1500 Ohms	100E-12 F	5 FAILED	5 N/R	5	10000	N/R	68	252	13		
1N4100	N/R	3	Diode, Zener, Voltage Regulator								Not Applicable				
	232	N/R	N/R	N/R	Ohms	100E-12 F	1 N/R	1	7854	N/R	102	184	13		

Part Number	Part ESD		Part Description	Technology									
	Mfr	Class		Test Date	Test Type	Resistance	Capacitance	Number	Date	Devices	Test Result	Voltage	Pin Combination
1N4101	N/R	3	Diode, Zener, Voltage Regulator					1	N/R	1	FAILED	7838	N/R
				Source	Date	Type	Resistance	Capacitance	Number	Date	Devices	Test Result	Voltage
	232	N/R	N/R	N/R	N/R	Ohms	100E-12	F	1	N/R	1	FAILED	7838
1N4103	N/R	3	Diode, Zener, Voltage Regulator										
	030	N/R	N/R	1500	Ohms	100E-12	F	1	N/R	1	FAILED	15000	N/R
	232	N/R	N/R	N/R	Ohms	100E-12	F	1	N/R	1	FAILED	7590	N/R
1N4103	MOT	N	Diode, Zener, Voltage Regulator										
	400	1287	SS	1500	Ohms	100E-12	F	400	N/R	10	FAILED	40000	ANODE TO CATHODE
1N4104	MOT	N	Diode, Zener, Voltage Regulator										
	400	1287	SS	1500	Ohms	100E-12	F	400	N/R	10	FAILED	40000	ANODE TO CATHODE
1N4105	MOT	N	Diode, Zener, Voltage Regulator										
	400	0188	SS	1500	Ohms	100E-12	F	400	N/R	10	PASSED	43000	ANODE TO CATHODE
1N4108	MOT	N	Diode, Zener, Voltage Regulator										
	400	0188	SS	1500	Ohms	100E-12	F	400	N/R	10	PASSED	43000	ANODE TO CATHODE
1N4109	MOT	N	Diode, Zener, Voltage Regulator										
	400	0188	SS	1500	Ohms	100E-12	F	400	N/R	10	PASSED	43000	ANODE TO CATHODE

RAC ESD Database

Failure Test General
Criteria Remarks Remarks
102 184 13

Not Applicable

103 252 13

102 184 13

Not Applicable

122 0 10

Not Applicable

122 0 10

Not Applicable

123 0 10

Not Applicable

123 0 10

Not Applicable

123 0 10

RAC ESD Database

Part Number	Part ESD		Part		Description										Technology				
	Mfr	Class	Mfr	Class	Resistance	Capacitance	Ohms	Test	Number	Date	Code	Pulses	Devices	Test	Result	Voltage	Pin Combination	Failure Test	General
1N4111	MOT	N	MOT	N	Diode, Zener, Voltage Regulator													Not Applicable	
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Ohms	Test 100E-12 F	Test 400 N/R	Test 400 N/R	Test 1 N/R	Test 1 N/R	Test 10 FAILED	Test 40000 ANODE TO CATHODE	Test 40000 ANODE TO CATHODE	Test 122	Test 0	Test 10	Test 10	Test 10
1N4112	N/R	3	N/R	3	Diode, Zener, Voltage Regulator													Not Applicable	
	232	N/R	N/R	N/R	Ohms	100E-12 F	1 N/R	1 N/R	1 N/R	1 N/R	1 N/R	1 FAILED	7608 N/R	7608 N/R	102	184	13		
1N4113	MOT	N	MOT	N	Diode, Zener, Voltage Regulator													Not Applicable	
	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	400 N/R	400 N/R	400 N/R	10 PASSED	43000 ANODE TO CATHODE					123	0	10		
1N4114	N/R	3	N/R	3	Diode, Zener, Voltage Regulator													Not Applicable	
	232	N/R	N/R	N/R	Ohms	100E-12 F	1 N/R	1 N/R	1 N/R	1 N/R	1 N/R	1 FAILED	7562 N/R	7562 N/R	102	184	13		
1N4116	N/R	3	N/R	3	Diode, Zener, Voltage Regulator													Not Applicable	
	232	N/R	N/R	N/R	Ohms	100E-12 F	1 N/R	1 N/R	1 N/R	1 N/R	1 N/R	1 FAILED	7471 N/R	7471 N/R	102	184	13		
1N4116	MOT	N	MOT	N	Diode, Zener, Voltage Regulator													Not Applicable	
	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	400 N/R	400 N/R	400 N/R	10 PASSED	43000 ANODE TO CATHODE					123	0	10		
1N4118	MOT	N	MOT	N	Diode, Zener, Voltage Regulator													Not Applicable	
	400	1287 SS	1500 Ohms	100E-12 F	400 N/R	400 N/R	400 N/R	400 N/R	10 FAILED	40000 ANODE TO CATHODE					122	0	10		
1N4120	MOT	N	MOT	N	Diode, Zener, Voltage Regulator													Not Applicable	
	400	1287 SS	1500 Ohms	100E-12 F	400 N/R	400 N/R	400 N/R	400 N/R	10 FAILED	40000 ANODE TO CATHODE					122	0	10		

RAC ESD Database

Part Number	Part ES0		Part Description	Test										Technology			
	Mfr Number	Class		Test Date	Test Type	Resistance	Capacitance	Pulses	Code	Number	Test Result	Test Voltage	Pin Combination	Failure Criteria	Test Remarks	General Remarks	
1N4120	N/R	3	Diode, Zener, Voltage Regulator	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	7337 N/R	102	184	13
	402	0787 SS	1500 Ohms	100E-12 F	5	N/R	5	FAILED	10000 N/R				68	252	13		
1N4121	N/R	3	Diode, Zener, Voltage Regulator	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	7271 N/R	102	184	13
1N4122	MOT	N	Diode, Zener, Voltage Regulator	400	1287 SS	1500 Ohms	100E-12 F	400	N/R	10	FAILED	40000 ANODE TO CATHODE	122	0	10		
1N4123	N/R	3	Diode, Zener, Voltage Regulator	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	7142 N/R	102	184	13
1N4124	N/R	3	Diode, Zener, Voltage Regulator	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	7057 N/R	102	184	13
1N4125	N/R	3	Diode, Zener, Voltage Regulator	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	6973 N/R	102	184	13
1N4126	N/R	3	Diode, Zener, Voltage Regulator	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	6891 N/R	102	184	13

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Part Number	Part ESD		Part Description	Technology															
	Mfr Number	Class		Test Date	Test Type	Resistance	Capacitance	Test Ohms	100E-12 F	Number Pulses	Date Code	Test Result	Test Voltage	Pin Combination	Failure Criteria	Test Remarks	General Remarks		
1N4127	N/R	3	Diode, Zener, Voltage Regulator	232	N/R	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	6790	N/R	102	184	13
1N4128	MOT	N	Diode, Zener, Voltage Regulator	400	0188	SS	1500	Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0	10	10
1N4128	N/R	3	Diode, Zener, Voltage Regulator	232	N/R	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	6671	N/R	102	184	13
1N4129	N/R	3	Diode, Zener, Voltage Regulator	232	N/R	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	6671	N/R	102	184	13
1N4130	N/R	3	Diode, Zener, Voltage Regulator	232	N/R	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	6555	N/R	102	184	13
1N4131	N/R	3	Diode, Zener, Voltage Regulator	232	N/R	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	6423	N/R	102	184	13
1N4131	MOT	N	Diode, Zener, Voltage Regulator	400	0188	SS	1500	Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0	10	10
1N4132	N/R	3	Diode, Zener, Voltage Regulator	232	N/R	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	6294	N/R	102	184	13

RAC ESD Database

Part Number	Part ESD		Part Description	Test				Number		Date		Pulses		Code		Devices		Test		Voltage		Pin		Combination		Failure Criteria		Test Remarks		General Remarks	
	Mfr	Class		Test	Type	Resistance	Capacitance	Ohms	N/R	Ohms	100E-12 F	1	N/R	1	N/R	1	FAILED	6135	N/R	102	184	13	13	102	184	13	13	102	184	13	13
1N4134	N/R	3	Diode, Zener, Voltage Regulator																												
1N4148	FSC	1	Diode, Small Signal, General Purpose																												
029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	1189	N/R																					
1N4148	MSC	3	Diode, Small Signal, General Purpose																												
436	1186 SS	1500 Ohms	100E-12 F	18	N/R	48	PASSED	4000	N/R																						
1N4148	N/R	3	Diode, Small Signal, General Purpose																												
030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	4500	N/R																					
1N4148-1	N/R	3	Diode, Small Signal, General Purpose																												
030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	PASSED	15300	N/R																					
1N4148-1	FSC	3	Diode, Small Signal, General Purpose																												
394	0485 SS	1500 Ohms	100E-12 F	10	N/R	11	PASSED	4000	N/R																						
1N4148-1	MSC	2	Diode, Small Signal, General Purpose																												
436	1136 SS	1500 Ohms	100E-12 F	16	N/R	65	FAILED	3000	CATHODE TO ANODE																						
1N4150	N/R	2	Diode, Small Signal, General Purpose																												
232	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	2787	N/R																					

RAC ESD Database

Part Number	(Cont'd)	Part ESD		Part Description	Mfr Class	Test Test Test Test Test Test Test Test										Technology	
		UNI	2			Source Date	Date Type	Resistance	Capacitance	Pulses	Code	Number	Devices	Voltage Pin Combination	Failure Criteria	General Remarks	
1N4150		UNI	2	Diode, Small Signal, General Purpose											Not Applicable		
		436	0688	SS	1500	Ohms	100E-12	F	18	N/R	5	FAILED	4000 CATHODE TO ANODE	5	252	3	
		436	0488	SS	1500	Ohms	100E-12	F	18	N/R	19	FAILED	4000 CATHODE TO ANODE	5	252	3	
		436	1186	SS	1500	Ohms	100E-12	F	18	N/R	19	PASSED	4000 N/R	5	252	3	
1N4150		MSC	3	Diode, Small Signal, General Purpose											Not Applicable		
		436	1186	SS	1500	Ohms	100E-12	F	18	N/R	1	PASSED	4000 N/R	5	252	3	
1N4150-1		GE	N	Diode, Small Signal, Switching											Not Applicable		
		026	0178	SS	100	Ohms	200E-12	F	1	N/R	4	FAILED	3875 C(+) A(-)	90	285	13	
1N4150-1		UNI	3	Diode, Small Signal, Switching											Not Applicable		
		436	0588	SS	1500	Ohms	100E-12	F	18	N/R	5	PASSED	4000 N/R	5	252	3	
1N4150-1		MSC	3	Diode, Small Signal, Switching											Not Applicable		
		436	1186	SS	1500	Ohms	100E-12	F	18	N/R	13	PASSED	4000 N/R	5	252	3	
1N4150-1		N/R	3	Diode, Small Signal, Switching											Not Applicable		
		030	N/R	N/R	1500	Ohms	100.-12	F	1	N/R	1	FAILED	4500 N/R	103	252	13	
1N4151		N/R	N	Diode, Small Signal, General Purpose											Not Applicable		
		048	N/R	SS	100	Ohms	218E-12	F	1	N/R	1	PASSED	3000 N/R	14	252	23	

RAC ESD Database

Part Number	Part ESD		Part		Description		Technology	
	Mfr	Class	Test	Test	Test	Test	Failure Test	General
1N4152	FSC	3	Diode, Small Signal, General Purpose	100E-12 F	1 N/R	1 FAILED	4077 N/R	102 188 13
1N4153-1	N/R	2	Diode, Small Signal, General Purpose	100E-12 F	1 N/R	1 FAILED	2625 N/R	102 184 13
1N4153-1	UNI	1	Diode, Small Signal, General Purpose	100E-12 F	18 N/R	5 PASSED	4000 N/R	5 252 3
1N4154	FSC	2	Diode, Small Signal, General Purpose	100E-12 F	14 N/R	5 FAILED	2000 CATHODE TO ANODE	5 252 3
1N416G	N/R	1	Diode, Microwave	100E-12 F	1 N/R	1 FAILED	3293 N/R	102 188 13
1N4244	FSC	1	Diode, Small Signal, General Purpose	100E-12 F	1 N/R	1 FAILED	1910 N/R	102 189 13
1N429	CEN	N	Diode, Zener, Voltage Regulator	100E-12 F	1 N/R	1 FAILED	22809 N/R	102 189 13

RAC ESD Database

Part Number	Part		Part Description										Technology	
	Mfr	Class	Description				Description				Not Applicable			
1N4370	TRC	N	Diode, Zener, Voltage Reference											
Test Test Test Test Test Test Test Test Test Test Test Test Test Test Test														
Source Date Type Resistance Capacitance Pulses Code Devices Result Voltage Pin Combination Criteria Remarks General														
029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	107626	N/R	102	188	13	
1N4370	MOT	N	Diode, Zener, Voltage Reference										Not Applicable	
400	0188	SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0	10	
1N4385	IIT	N	Thyristor, SCR										Not Applicable	
029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	16674	N/R	102	188	13	
1N4450	FSC	3	Diode, Small Signal, General Purpose										Not Applicable	
029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	5889	N/R	102	188	13	
1N4454	N/R	2	Diode, Small Signal, General Purpose										Not Applicable	
232	N/R	N/R	N/R Ohms	100E-12 F	1	N/R	1	FAILED	2625	N/R	102	184	13	
1N4465	N/R	3	Diode, Zener, Voltage Regulator										Not Applicable	
030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	PASSED	15300	N/R	103	252	13	
1N4467	N/R	3	Diode, Zener, Voltage Regulator										Not Applicable	
030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	PASSED	15300	N/R	103	252	13	
1N4469	N/R	3	Diode, Zener, Voltage Regulator										Not Applicable	
030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	PASSED	15300	N/R	103	252	13	

RAC ESD Database

Part Number	Part ESD		Part Description		Technology	
	Mfr	Class				
1N4471	N/R	3	Diode, Zener, Voltage Regulator		Not Applicable	
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Voltage
	030	N/R	N/R	1500 Ohms	100E-12 F	15300 N/R
1N4474	N/R	3	Diode, Zener, Voltage Regulator		Not Applicable	
	030	N/R	N/R	1500 Ohms	100E-12 F	15300 N/R
1N4476	N/R	3	Diode, Zener, Voltage Regulator		Not Applicable	
	030	N/R	N/R	1500 Ohms	100E-12 F	15300 N/R
1N4554	MOT	N	Diode, Zener, Voltage Reference		Not Applicable	
	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	43000 ANODE TO CATHODE
1N4561	FSC	3	Diode, Zener, Voltage Regulator		Not Applicable	
	029	N/R	N/R	1500 Ohms	100E-12 F	13624 N/R
1N4565	MOT	N	Diode, Zener, Voltage Reference		Not Applicable	
	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	43000 ANODE TO CATHODE
1N4565A	MSC	3	Diode, Zener, Voltage Reference		Not Applicable	
	436	1186 SS	1500 Ohms	100E-12 F	18 N/R	4000 N/R
1N4566	MOT	N	Diode, Zener, Voltage Reference		Not Applicable	
	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	43000 ANODE TO CATHODE

RAC ESD Database

Part Number	Part ESD		Part Description	Technology			
	Mfr	Class		Not Applicable			
1N457	FSC	3	Diode, Rectifier, Low Power				
	Test Date	Test Type	Test Resistance	Test Capacitance	Number Date	Test Result	Test Voltage
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	7437 N/R
						1 FAILED	
1N4570	MOT	N	Diode, Zener, Voltage Reference	Not Applicable			
	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED	43000 ANODE TO CATHODE
						123	0 10
1N4573	MOT	N	Diode, Zener, Voltage Reference	Not Applicable			
	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED	43000 ANODE TO CATHODE
						123	0 10
1N4574A	MSC	3	Diode, Zener, Voltage Reference	Not Applicable			
	436	1186 SS	1500 Ohms	100E-12 F	18 N/R	5 PASSED	4000 N/R
						5	252 3
1N4574A	SIE	3	Diode, Zener, Voltage Reference	Not Applicable			
	436	1186 SS	1500 Ohms	100E-12 F	18 N/R	5 PASSED	4000 N/R
						5	252 3
1N459	TEX	3	Diode, Rectifier, Low Power	Not Applicable			
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	15090 N/R
						1 FAILED	
						102	189 13
1N459	N/R	3	Diode, Rectifier, Low Power	Not Applicable			
	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	12000 N/R
						1 FAILED	
						103	252 13
	048	N/R	SS	100 Ohms	218E-12 F	1 N/R	3000 N/R
						1 PASSED	
						14	252 23

RAC ESD Database

Part Number	Part ESD		Part Description	Technology			
	Mfr	Class		Not Applicable			
1N459A	TRW	N	Diode, Rectifier, Low Power				
	Test Date	Test Type	Test Resistance	Test Capacitance	Number Date	Test Result	Test Voltage
	Source	Date	Type	Resistance	Capacitance	Number	Test Result
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED
							20969 N/R
							Pin Combination
							General Remarks
							102 189 13
1N4614	N/R	3	Diode, Zener, Voltage Regulator	Not Applicable			
030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	15000 N/R
							103 252 13
1N4615	MOT	N	Diode, Zener, Voltage Reference	Not Applicable			
400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED	43000 ANODE TO CATHODE	123 196 10
1N4616	MOT	N	Diode, Zener, Voltage Reference	Not Applicable			
400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED	43000 ANODE TO CATHODE	123 0 10
1N4619	MOT	N	Diode, Zener, Voltage Regulator	Not Applicable			
400	1287 SS	1500 Ohms	100E-12 F	400 N/R	10 FAILED	40000 ANODE TO CATHODE	122 0 10
1N4622	MOT	N	Diode, Zener, Voltage Reference	Not Applicable			
400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED	43000 ANODE TO CATHODE	123 0 10
1N4624	N/R	3	Diode, Zener, Voltage Reference	Not Applicable			
030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 PASSED	15300 N/R
							103 252 13
1N4624	MOT	N	Diode, Zener, Voltage Reference	Not Applicable			
400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED	43000 ANODE TO CATHODE	123 196 10

RAC ESD Database

Part Number	Part ESD		Part Description	Technology	
	Mfr	Class		Not Applicable	
1N4625	N/R	3	Diode, Zener, Voltage Regulator	Not Applicable	
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance
	030	N/R	N/R	1500 Ohms	100E-12 F
				1 N/R	1 N/R
				1 PASSED	15300 N/R
				103	252
				103	13
1N4626	N/R	3	Diode, Zener, Voltage Regulator	Not Applicable	
030	N/R	N/R	N/R	1500 Ohms	100E-12 F
				1 N/R	1 N/R
				1 PASSED	15300 N/R
				103	252
				103	13
1N4627	N/R	3	Diode, Zener, Voltage Regulator	Not Applicable	
030	N/R	N/R	N/R	1500 Ohms	100E-12 F
				1 N/R	1 N/R
				1 PASSED	15300 N/R
				103	252
				103	13
1N4627	MOT	N	Diode, Zener, Voltage Regulator	Not Applicable	
400	1287 SS	1500 Ohms	100E-12 F	400 N/R	10 FAILED
				40000 ANODE TO CATHODE	0
				122	0
				122	10
1N4679	N/R	3	Diode, Zener, Voltage Regulator	Not Applicable	
030	N/R	N/R	N/R	1500 Ohms	100E-12 F
				1 N/R	1 N/R
				1 PASSED	15300 N/R
				103	252
				103	13
1N4683	N/R	3	Diode, Zener, Voltage Regulator	Not Applicable	
030	N/R	N/R	N/R	1500 Ohms	100E-12 F
				1 N/R	1 N/R
				1 PASSED	15300 N/R
				103	252
				103	13
1N4686	N/R	3	Diode, Zener, Voltage Regulator	Not Applicable	
030	N/R	N/R	N/R	1500 Ohms	100E-12 F
				1 N/R	1 N/R
				1 PASSED	15300 N/R
				103	252
				103	13
1N4689	N/R	3	Diode, Zener, Voltage Regulator	Not Applicable	
030	N/R	N/R	N/R	1500 Ohms	100E-12 F
				1 N/R	1 N/R
				1 PASSED	15300 N/R
				103	252
				103	13

RAC ESD Database

Part Number	Part		Part ES										Technology						
	Mfr Number	Class	Description	Test		Resistance	Capacitance	Pulses	Code	Date	Number	Test	Result	Voltage	Pin	Combination	Failure Criteria	Test Remarks	General Remarks
				Type	Test														
1N4691	N/R	3	Diode, Zener, Voltage Regulator	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	PASSED	15300	N/R	103	252	13	Not Applicable		
1N4693	N/R	3	Diode, Zener, Voltage Regulator	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	PASSED	15300	N/R	103	252	13	Not Applicable		
1N4696	N/R	3	Diode, Zener, Voltage Regulator	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	PASSED	15300	N/R	103	252	13	Not Applicable		
1N4697	N/R	3	Diode, Zener, Voltage Regulator	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	PASSED	15300	N/R	103	252	13	Not Applicable		
1N4727	FSC	3	Diode, Small Signal, General Purpose	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	6399	N/R	102	188	13	Not Applicable		
1N4732	MOT	N	Diode, Zener, Voltage Regulator	N/R	N/R	1500 Ohms	100E-12 F	400	N/R	10	FAILED	40000	ANODE TO CATHODE	122	0	10	Not Applicable		
1N4821	FSC	3	Diode, Rectifier, High Power	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	11155	N/R	102	188	13	Not Applicable		
1N482A	TRC	N	Diode, Zener, Voltage Reference	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	27498	N/R	102	188	13	Not Applicable		

RAC ESD Database

Part Number	Part ESD		Part		Description		Technology	
	Mfr	Class	TRC	N	Diode, Zener, Voltage Reference	Not Applicable	Not Applicable	Not Applicable
1N4838	TRC	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	28562 N/R
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses	Test Code	Test Devices
029	N/R	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	28562 N/R
	Test Result	Test Voltage	Test Pin	Test Combination	Test Remarks	Test General	Test Criteria	Test Remarks
	1 FAILED	28562 N/R					102	188
							102	188
1N484A	TRC	3	Diode, Zener, Voltage Reference				Not Applicable	
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	14589 N/R	
							102	189
							102	189
1N486	TRC	3	Diode, Zener, Voltage Reference				Not Applicable	
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	7374 N/R	
							102	188
							102	188
1N496B	N/R	2	Diode, Zener, Voltage Reference				Not Applicable	
232	N/R	N/R	N/R	Ohms	100E-12 F	1 N/R	1 FAILED	3224 N/R
							102	184
							102	184
1N4905A	N/R	3	Diode, Zener, Voltage Reference				Not Applicable	
030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	15000 N/R	
							103	252
							103	252
1N4937	MOT	N	Diode, Rectifier, High Power				Not Applicable	
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	10054 N/R	
							102	189
							102	189
400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED	43000 ANODE TO CATHODE	123	0
							123	0
1N4938	N/R	3	Diode, Small Signal, General Purpose				Not Applicable	
232	N/R	N/R	N/R	Ohms	100E-12 F	1 N/R	1 FAILED	5827 N/R
							102	184
							102	184

RAC ESD Database

Part Number	Part ESD		Part Description	Test				Number		Test Result	Voltage		Pin Combination	Failure Test		General Remarks
	Mfr	Class		Test Type	Resistance	Capacitance	Test	Pulses	Code		Test Result	Test Voltage		Criteria	Test Remarks	
1N4942	N/R	N	N Diode, Rectifier, Fast Recovery	232	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	2388 N/R	102	184	13
1N4942	UNI	3	Diode, Rectifier, Fast Recovery	395	0886 SS	1500 Ohms	100E-12 F	5	N/R	1	PASSED	5000 N/R		102	166	6
1N4944	N/R	N	Diode, Rectifier, Fast Recovery	232	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	24771 N/R	102	184	13
1N4946	N/R	N	Diode, Rectifier, Fast Recovery	232	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	21703 N/R	102	184	13
1N4947	GI	2	Diode, Rectifier, Fast Recovery	394	0485 SS	1500 Ohms	100E-12 F	10	N/R	10	FAILED	4000 N/R		95	1	29
1N4948	N/R	3	Diode, Rectifier, Fast Recovery	232	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	15873 N/R	102	184	13
1N4954	N/R	3	Diode, Zener, Voltage Regulator	030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	PASSED	15300 N/R	103	252	13
1N4955	N/R	3	Diode, Zener, Voltage Regulator	030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	PASSED	15300 N/R	103	252	13

RAC ESD Database

Part Number	Part ESD		Part		Technology	
	Mfr	Class	Description		Not Applicable	
1N4956	N/R	3	Diode, Zener, Voltage Regulator			
	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses	Test Number
	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
						1 PASSED
						15300 N/R
						103
						252
						13
1N4957	N/R	3	Diode, Zener, Voltage Regulator			
	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
						1 PASSED
						15300 N/R
						103
						252
						13
1N4958	N/R	3	Diode, Zener, Voltage Regulator			
	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
						1 PASSED
						15300 N/R
						103
						252
						13
1N4960	N/R	3	Diode, Zener, Voltage Regulator			
	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
						1 PASSED
						15300 N/R
						103
						252
						13
1N4961	MSC	3	Diode, Zener, Voltage Regulator			
	436	1186 SS	1500 Ohms	100E-12 F	18 N/R	1 PASSED
						4000 N/R
						5
						252
						3
1N4962	N/R	3	Diode, Zener, Voltage Regulator			
	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
						1 PASSED
						15300 N/R
						103
						252
						13
1N4964	N/R	3	Diode, Zener, Voltage Regulator			
	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
						1 PASSED
						15300 N/R
						103
						252
						13
1N4967	N/R	3	Diode, Zener, Voltage Regulator			
	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
						1 PASSED
						15300 N/R
						103
						252
						13

RAC ESD Database

Part Number	Part ESD		Part		Description		Technology	
	Mfr	Class	Test	Date	Test	Resistance	Capacitance	Not Applicable
1N4969	N/R	3	Diode, Zener, Voltage Regulator					
	Test	Date	Type	Test	Resistance	Capacitance	Test	General
	Source	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	103 252 13
1N4971	N/R	3	Diode, Zener, Voltage Regulator					
	Test	Date	Type	Test	Resistance	Capacitance	Test	General
	Source	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	103 252 13
1N4972	N/R	3	Diode, Zener, Voltage Regulator					
	Test	Date	Type	Test	Resistance	Capacitance	Test	General
	Source	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	103 252 13
1N4974	N/R	3	Diode, Zener, Voltage Regulator					
	Test	Date	Type	Test	Resistance	Capacitance	Test	General
	Source	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	103 252 13
1N4976	N/R	1	Diode, Zener, Voltage Regulator					
	Test	Date	Type	Test	Resistance	Capacitance	Test	General
	Source	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	103 252 13
1N4976	MSC	3	Diode, Zener, Voltage Regulator					
	Test	Date	Type	Test	Resistance	Capacitance	Test	General
	Source	436	1186 SS	1500 Ohms	100E-12 F	18 N/R	5 PASSED	5 252 3
1N4979	N/R	3	Diode, Zener, Voltage Regulator					
	Test	Date	Type	Test	Resistance	Capacitance	Test	General
	Source	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	103 252 13
1N5139	MOT	3	Diode, Microwave, Var. Cap. (Varactor)					
	Test	Date	Type	Test	Resistance	Capacitance	Test	General
	Source	402	0887 SS	1500 Ohms	100E-12 F	5 N/R	4 FAILED	68 252 13

RAC ESD Database

Part Number	Part ESD		Part Description	Technology									
	Mfr	Class		Test	Test	Test	Test	Test	Test	Test	Test	Test	General
1N5139A	N/R	3	Diode, Microwave, Var. Cap. (Varactor)	Not Applicable									
				Source	Date	Type	Resistance	Capacitance	Pulses	Number	Code	Devices	Pin Combination
	232	N/R	N/R	N/R	N/R	SS	100 Ohms	100E-12 F	1	N/R	1	FAILED	5600 N/R
													102 184 13
1N5139A													
													Not Applicable
	026	0178	SS	100	Ohms	200E-12 F	1	N/R	4	FAILED	513 C(+) A(-)	90	285 13
1N5140													
													Not Applicable
	402	0787	SS	1500	Ohms	100E-12 F	5	N/R	9	FAILED	9000 N/R	68	252 13
									4	FAILED	9000 N/R	68	252 13
1N5140A													
													Not Applicable
	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	7010 N/R	102	184 13
1N5144A													
													Not Applicable
	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	11090 N/R	102	184 13
1N5146													
													Not Applicable
	402	0887	SS	1500	Ohms	100E-12 F	5	N/R	10	FAILED	5000 N/R	68	252 13
1N5148													
													Not Applicable
	402	0887	SS	1500	Ohms	100E-12 F	5	8615	4	FAILED	2000 N/R	68	257 13
1N5148A													
													Not Applicable
	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	16758 N/R	102	184 13

RAC ESD Database

Part Number	Part ESD		Part	Description										Technology			
	Mfr	Class												Not Applicable			
1N5197	N/R	N	N	Diode, Rectifier, Fast Recovery													
	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test
	Source	Date	Type	Resistance	Capacitance	Pulses	Code	Devices	Result	Voltage	Pin	Combination	Failure	Test	Criteria	Remarks	General
	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	68381	N/R	102	184	102	184	13
1N5193	N/R	N	N	Diode, Rectifier, Fast Recovery											Not Applicable		
	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	75226	N/R	102	184	102	184	13
1N5193	N/R	N	N	Diode, Rectifier, Fast Recovery											Not Applicable		
	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	74897	N/R	102	184	102	184	13
1N5221	MOT	N	N	Diode, Zener, Voltage Regulator											Not Applicable		
	400	1287	SS	1500	Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	122	0	122	0	10
1N5230	MOT	N	N	Diode, Zener, Voltage Reference											Not Applicable		
	400	0188	SS	1500	Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0	123	0	10
1N5233	MOT	N	N	Diode, Zener, Voltage Regulator											Not Applicable		
	029	N/R	N/R	1500	Ohms	100E-12 F	1	N/R	1	FAILED	84112	N/R	102	189	102	189	13
	400	1287	SS	1500	Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	122	0	122	0	10
1N5250	MOT	N	N	Diode, Zener, Voltage Regulator											Not Applicable		
	400	1287	SS	1500	Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	122	0	122	0	10

RAC ESD Database

Part Number	Part ESD		Part Description	Test										Technology			
	Mfr	Class		Source	Test Date	Type	Resistance	Capacitance	Pulses	Code	Number	Test Result	Test Voltage	Pin Combination	Failure Criteria	Test Remarks	General Remarks
1N5250	MOT	N	Diode, Zener, Voltage Regulator	400	0188	SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0	10
1N5255	MOT	N	Diode, Zener, Voltage Regulator												Not Applicable		
	400	1287	SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	122	0	10			
	400	0188	SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0	10			
1N5260	MOT	N	Diode, Zener, Voltage Regulator												Not Applicable		
	400	1287	SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	122	0	10			
	400	0188	SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	196	10			
1N5264	MOT	N	Diode, Zener, Voltage Regulator												Not Applicable		
	400	1287	SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	122	0	10			
	400	0188	SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0	10			
1N5267	MOT	N	Diode, Zener, Voltage Regulator												Not Applicable		
	400	1287	SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	122	0	10			
	400	0188	SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0	10			
1N5270	MOT	N	Diode, Zener, Voltage Regulator												Not Applicable		
	400	1287	SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	122	0	10			
	400	1287	SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	122	0	10			
1N5285	MOT	3	Diode, Current Regulator												Not Applicable		
	026	0178	SS	100 Ohms	200E-12 F	1	N/R	4	FAILED	1950	A(+) C(-)	90	285	13			

RAC ESD Database

Part Number	Part ESD		Part Description		Technology	
	Mfr	Class	Description		Not Applicable	
1N5287	MOT	N	Diode, Current Regulator		Not Applicable	
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Test
	029	N/R	N/R	1500 Ohms	100E-12 F	100E-12 F
1N5288	MOT	N	Diode, Current Regulator		Not Applicable	
	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED
1N5290	MOT	N	Diode, Zener, Voltage Regulator		Not Applicable	
	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED
1N5291	N/R	3	Diode, Current Regulator		Not Applicable	
	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
1N5291	MOT	N	Diode, Current Regulator		Not Applicable	
	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED
1N5292	MOT	N	Diode, Current Regulator		Not Applicable	
	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED
1N5297	MOT	N	Diode, Current Regulator		Not Applicable	
	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED
1N5299	MOT	N	Diode, Current Regulator		Not Applicable	
	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED

RAC ESD Database

Part Number	Part ESD		Part Description	Technology													
	Mfr	Class		Not Applicable													
1N5301	MOT	N	Diode, Current Regulator	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses	Number Date	Test Devices	Test Result	Test Voltage	Pin Combination	Failure Criteria	Test Remarks	General Remarks
	400	0188	SS	1500 Ohms	100E-12	F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0	10		
1N5306	MOT	N	Diode, Current Regulator													Not Applicable	
	400	0188	SS	1500 Ohms	100E-12	F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0	10		
1N5308	MOT	N	Diode, Current Regulator													Not Applicable	
	400	0188	SS	1500 Ohms	100E-12	F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0	10		
1N5310	MOT	N	Diode, Current Regulator													Not Applicable	
	400	0188	SS	1500 Ohms	100E-12	F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0	10		
1N5311	MOT	N	Diode, Current Regulator													Not Applicable	
	400	0188	SS	1500 Ohms	100E-12	F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0	10		
1N5312	MOT	N	Diode, Current Regulator													Not Applicable	
	400	0188	SS	1500 Ohms	100E-12	F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0	10		
1N5313	MOT	N	Diode, Current Regulator													Not Applicable	
	400	0188	SS	1500 Ohms	100E-12	F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0	10		
1N5330	MOT	N	Diode, Rectifier, High Power													Not Applicable	
	400	1287	SS	1500 Ohms	100E-12	F	400	N/R	10	FAILED	40000	ANODE TO CATHODE	122	0	10		

RAC ESD Database

Part Number	Part		Part ESD		Description										Technology		
	Mfr	Class	Mfr	Class	Test Type	Test Resistance	Test Capacitance	Test Pulses	Number Code	Date Devices	Test Result	Test Voltage	Test Pin Combination	Failure Criteria	Test Remarks	General Remarks	
1N5356	MOT	N	Diode, Zener														Not Applicable

RAC ESD Database

Part Number	Part ESD		Part		Technology											
	Mfr	Class	Description		Not Applicable											
1N5417	N/R	3	Diode, Rectifier, Fast Recovery													
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses	Number Devices	Test Result	Test Voltage	Test Pin Combination	Failure Criteria	Test: Remarks	General Remarks			
	030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1 FAILED	6000	N/R	103	252	13			
	232	N/R	N/R	N/R Ohms	100E-12 F	1	N/R	1 FAILED	62028	N/R	102	184	13			
1N5417	GI	1	Diode, Rectifier, Fast Recovery										Not Applicable			
	394	0485	SS	1500 Ohms	100E-12 F	10	N/R	3 FAILED	2000	N/R	95	238	29			
						1	FAILED	1100	N/R		95	241	29			
1N5417	MSC	3	Diode, Rectifier, Fast Recovery										Not Applicable			
	436	1186	SS	1500 Ohms	100E-12 F	18	N/R	5 PASSED	4000	N/R	5	252	3			
1N5417A	UNI	3	Diode, Rectifier, Fast Recovery										Not Applicable			
	394	0485	SS	1500 Ohms	100E-12 F	10	N/R	2 PASSED	4000	N/R	95	59	29			
1N5418	N/R	N	Diode, Rectifier, Fast Recovery										Not Applicable			
	232	N/R	N/R	N/R Ohms	100E-12 F	1	N/R	1 FAILED	62087	N/R	102	184	13			
	026	0178	SS	100 Ohms	200E-12 F	1	N/R	4 FAILED	6000	C(+) A(-)	90	285	13			
1N5420	N/R	3	Diode, Rectifier, Fast Recovery										Not Applicable			
	030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1 PASSED	15300	N/R	103	252	13			
						1	FAILED	9000	N/R		103	252	13			
1N5463B	N/R	3	Diode, Microwave, Var. Cap. (Varactor)										Not Applicable			
	232	N/R	N/R	N/R Ohms	100E-12 F	1	N/R	1 FAILED	5465	N/R	102	184	13			

RAC ESD Database

Part Number	Part ESD		Part		Technology	
	Mfr	Class	Description	Not Applicable	Not Applicable	Not Applicable
1N5467B	N/R	3	Diode, Microwave, Var. Cap. (Varactor)			
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Voltage
	232	N/R	N/R	N/R	Ohms	100E-12 F
						1 N/R
						1 FAILED
						8126 N/R
						13
1N547	TEX	N	Diode, Rectifier, High Power			Not Applicable
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED
						76707 N/R
						13
1N5476B	N/R	N	Diode, Microwave, Var. Cap. (Varactor)			Not Applicable
232	N/R	N/R	N/R	Ohms	100E-12 F	1 N/R
						1 FAILED
						18736 N/R
						13
1N5523B	N/R	3	Diode, Zener, Voltage Regulator			Not Applicable
030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED
						15000 N/R
						13
1N5525	MOT	N	Diode, Zener, Voltage Regulator			Not Applicable
400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED	43000 N/R
						123
						0
						10
1N5525B	MSC	3	Diode, Zener, Voltage Regulator			Not Applicable
436	1186 SS	1500 Ohms	100E-12 F	18 N/R	3 PASSED	4000 N/R
						5
						252
						3
1N553	N/R	N	Diode, Rectifier, Low Power			Not Applicable
232	N/R	N/R	N/R	Ohms	100E-12 F	1 N/R
						1 FAILED
						68061 N/R
						13
1N5530	MOT	N	Diode, Zener, Voltage Regulator			Not Applicable
400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED	43000 ANODE TO CATHODE
						123
						0
						10

RAC ESD Database

Part Number	Part ESD		Part Description	Technology									
	Mfr	Class		Not Applicable									
1N5538	MOT	N	Diode, Zener, Voltage Regulator	Test Date	Test Type	Resistance	Capacitance	Test	Number	Date	Code	Pulses	Test Result
				400	0188	SS	1500 Ohms	100E-12 F	400	N/R		400	20 PASSED
									20			43000 ANODE TO CATHODE	123 0 10
1N5546	MOT	N	Diode, Zener, Voltage Regulator										Not Applicable
				400	0188	SS	1500 Ohms	100E-12 F	400	N/R		400	10 PASSED
												43000 ANODE TO CATHODE	123 0 10
1N5550	N/R	N	Diode, Rectifier, High Power										Not Applicable
				232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R		1 FAILED
												47043 N/R	102 184 13
1N5550	MSC	3	Diode, Rectifier, High Power										Not Applicable
				436	1186	SS	1500 Ohms	100E-12 F	18	N/R		4000	10 PASSED
												4000	5 PASSED
												4000	5 252 3
1N5550	UNI	3	Diode, Rectifier, High Power										Not Applicable
				436	1186	SS	1500 Ohms	100E-12 F	18	N/R		4000	1 PASSED
												4000	5 252 3
1N5552	SEM	N	Diode, Rectifier, High Power										Not Applicable
				029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R		34778	1 FAILED
												53765	102 188 13
1N5552	N/R	3	Diode, Rectifier, High Power										Not Applicable
				030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R		5000	1 FAILED
												53765	103 252 13
				232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R		1 FAILED
												53765	102 184 13

RAC ESD Database

Part Number	Part ESD		Part		Technology	
	Mfr	Class	Description		Not Applicable	
1N5554	N/R	N	Diode, Rectifier, High Power			
	Test	Test	Test	Test	Test	General
	Source	Date	Type	Resistance	Capacitance	Pulses
232	N/R	N/R	N/R	Ohms	100E-12 F	1 N/R
	1	FAILED	54348	N/R		
1N5555	N/R	3	Diode, Suppressor, Transient			
030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 PASSED
					15300	N/R
1N5556	GEN	N	Diode, Suppressor, Transient			
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED
					188033	N/R
1N5558	N/R	3	Diode, Suppressor, Transient			
030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 PASSED
					15300	N/R
1N5614	SEM	3	Diode, Rectifier, High Power			
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED
					11990	N/R
1N5614	N/R	3	Diode, Rectifier, High Power			
030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED
					8000	N/R
232	N/R	N/R	N/R	Ohms	100E-12 F	1 N/R
					23868	N/R
1N5615	GI	2	Diode, Rectifier, Fast Recovery			
394	0485	SS	1500 Ohms	100E-12 F	10 N/R	3 FAILED
					4000	N/R

RAC ESD Database

Part Number	Part ESD		Part Description	Technology													
	Mfr	Class		Test Source	Test Date	Test Type	Resistance	Capacitance	Number Pulses	Date Code	Number Devices	Test Result	Test Voltage	Pin Combination	Failure Criteria	Test Remarks	General Remarks
1N5615	N/R	3	Diode, Rectifier, Fast Recovery	030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	9000	N/R	103	252	13
	232	N/R	N/R	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	23868	N/R	102	184	13
1N5615	SEN	2	Diode, Rectifier, Fast Recovery												Not Applicable		
	394	0485	SS	1500	Ohms	100E-12 F			10	N/R	11	FAILED	4000	N/R	95	239	29
1N5616	SEM	3	Diode, Rectifier, High Power												Not Applicable		
	029	N/R	N/R	1500	Ohms	100E-12 F			1	N/R	1	FAILED	11403	N/R	102	188	13
1N5616	N/R	N	Diode, Rectifier, High Power												Not Applicable		
	232	N/R	N/R	N/R	Ohms	100E-12 F			1	N/R	1	FAILED	24771	N/R	102	184	13
1N5617	N/R	N	Diode, Rectifier, Fast Recovery												Not Applicable		
	232	N/R	N/R	N/R	Ohms	100E-12 F			1	N/R	1	FAILED	24771	N/R	102	184	13
1N5617	SEN	3	Diode, Rectifier, Fast Recovery												Not Applicable		
	394	0485	SS	1500	Ohms	100E-12 F			5	N/R	3	PASSED	4000	N/R	95	59	29
											11	PASSED	4000	N/R	95	59	29
1N5618	N/R	N	Diode, Rectifier, High Power												Not Applicable		
	232	N/R	N/R	N/R	Ohms	100E-12 F			1	N/R	1	FAILED	21703	N/R	102	184	13

RAC ESD Database

Part Number	Part ESD		Part Description	Technology														
	Mfr Number	Class		Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses	Number Code	Date Devices	Test Result	Test Voltage	Test Pin Combination	Failure Criteria	Test Remarks	General Remarks		
1N5619	N/R	N	Diode, Rectifier, Fast Recovery	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	21703	N/R	102	184	13
1N5622	N/R	3	Diode, Rectifier, High Power	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	15868	N/P	102	184	13
1N5623	N/R	N	Diode, Rectifier, Fast Recovery	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	17775	N/R	102	184	13
1N5635A	GEN	3	Diode, Suppressor, Transient	436	1186	SS	1500	Ohms	100E-12 F	18	N/R	1	PASSED	4000	N/R	5	252	3
1N5647A	GEN	3	Diode, Suppressor, Transient	436	1186	SS	1500	Ohms	100E-12 F	18	N/R	5	PASSED	4000	N/R	5	252	3
1N5656A	GEN	3	Diode, Suppressor, Transient	436	1186	SS	1500	Ohms	100E-12 F	18	N/R	5	PASSED	4000	N/R	5	252	3
1N5711	N/R	2	Diode, Small Signal, General Purpose	030	N/R	N/R	1500	Ohms	100E-12 F	1	N/R	1	FAILED	2500	N/R	103	252	13
	N/R	N/R	N/R	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	2452	N/R	102	184	13

RAC ESD Database

Part Number	Part ESD		Part Description	Test										Technology			
	Mfr	Class		Source	Date	Type	Resistance	Capacitance	Pulses	Code	Devices	Test Result	Voltage	Pin Combination	Failure Criteria	Test Remarks	General Remarks
1N5711	N/R	2	Diode, Small Signal, General Purpose	028	N/R	SS	1500 Ohms	117E-12 F	30	N/R	5	FAILED	300 N/R	97	252	13	
1N5711	HEW	1	Diode, Small Signal, General Purpose														Not Applicable
	277	N/R	GN	1500 Ohms	100E-12 F	200	N/R	1	PASSED	275 C(+) A(-)				94	252	13	
	278	N/R	GN	1500 Ohms	100E-12 F	65	N/R	1	PASSED	300 C(+) A(-)				94	252	13	
	278	N/R	GN	1500 Ohms	100E-12 F	500	N/R	1	PASSED	300 C(+) A(-)				94	252	13	
								8	PASSED	300 C(+) A(-)				94	252	13	
	278	N/R	GN	1500 Ohms	100E-12 F	1	N/R	1	FAILED	300 C(+) A(-)				94	252	13	
	278	N/R	GN	1500 Ohms	100E-12 F	500	N/R	1	FAILED	300 C(+) A(-)				94	252	13	
	279	N/R	GN	1500 Ohms	100E-12 F	10	N/R	1	FAILED	325 C(+) A(-)				94	252	13	
	279	N/R	GN	1500 Ohms	100E-12 F	50	N/R	1	FAILED	325 C(+) A(-)				94	252	13	
	280	N/R	GN	1500 Ohms	100E-12 F	37	N/R	1	FAILED	350 C(+) A(-)				94	252	13	
1N5711	280	N/R	GN	1500 Ohms	100E-12 F	75	N/R	1	FAILED	350 C(+) A(-)				94	252	13	
	281	N/R	GN	1500 Ohms	100E-12 F	2	N/R	1	FAILED	375 C(+) A(-)				94	252	13	
	282	N/R	GN	1500 Ohms	100E-12 F	7	N/R	1	FAILED	400 C(+) A(-)				94	252	13	
	282	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	400 C(+) A(-)				94	252	13	
	282	N/R	GN	1500 Ohms	100E-12 F	8	N/R	1	FAILED	400 C(+) A(-)				94	252	13	
	282	N/R	GN	1500 Ohms	100E-12 F	9	N/R	1	FAILED	400 C(+) A(-)				94	252	13	

RAC ESD Database

Part Number	Part ESD		Part Description	Technology																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	Mfr	Class		Not Applicable																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
1N5711	HEW	1	Diode, Small Signal, General Purpose	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test</

RAC ESD Database

Part Number (Cont'd)	Part ESD		Part Description Mfr Class	1 Diode, Small Signal, General Purpose										Technology	
	HEW													Not Applicable	
	Test Source	Test Date		Test Type	Resistance	Capacitance	Test Pulses	Number Code	Date Devices	Test Result	Test Voltage	Test Pin Combination	Failure Criteria	Test Remarks	General Remarks
1N5711	285	N/R	GN	1500 Ohms	100E-12 F	8	N/R	1	FAILED	550 C(+)	A(-)	94	252	13	
	286	N/R	GN	1500 Ohms	100E-12 F	1	N/R	5	PASSED	560 C(+)	A(-)	94	252	13	
								5	FAILED	560 C(+)	A(-)	94	252	13	
	287	N/R	GN	1500 Ohms	100E-12 F	1	N/R	1	FAILED	600 C(+)	A(-)	94	252	13	
	287	N/R	GN	1500 Ohms	100E-12 F	2	N/R	2	FAILED	600 C(+)	A(-)	94	252	13	
	287	N/R	GN	1500 Ohms	100E-12 F	1	N/R	6	FAILED	600 C(+)	A(-)	94	252	13	
	287	N/R	GN	1500 Ohms	100E-12 F	3	N/R	2	FAILED	600 C(+)	A(-)	94	252	13	
	287	N/R	GN	1500 Ohms	100E-12 F	5	N/R	1	FAILED	600 C(+)	A(-)	94	252	13	
	287	N/R	GN	1500 Ohms	100E-12 F	8	N/R	1	FAILED	600 C(+)	A(-)	94	252	13	
	289	N/R	GN	1500 Ohms	100E-12 F	1	N/R	7	FAILED	630 C(+)	A(-)	94	252	13	
								3	PASSED	630 C(+)	A(-)	94	252	13	
	290	N/R	GN	1500 Ohms	100E-12 F	1	N/R	1	FAILED	650 C(+)	A(-)	94	252	13	
	290	N/R	GN	1500 Ohms	100E-12 F	2	N/R	1	FAILED	650 C(+)	A(-)	94	252	13	
	290	N/R	GN	1500 Ohms	100E-12 F	4	N/R	1	FAILED	650 C(+)	A(-)	94	252	13	
	290	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	650 C(+)	A(-)	94	252	13	
	290	N/R	GN	1500 Ohms	100E-12 F	4	N/R	1	FAILED	650 C(+)	A(-)	94	252	13	
	291	N/R	GN	1500 Ohms	100E-12 F	1	N/R	1	FAILED	675 C(+)	A(-)	94	252	13	
	291	N/R	GN	1500 Ohms	100E-12 F	3	N/R	1	FAILED	675 C(+)	A(-)	94	252	13	

RAC ESD Database

Part Number	ESD Class	Part Description	Technology	
			Failure Criteria	Test Remarks
1N5711	HEW	1 Diode, Small Signal, General Purpose	Not Applicable	
1N5712	N/R	1 Diode, Small Signal, General Purpose	Not Applicable	
		232 N/R N/R N/R Ohms 100E-12 F	1 N/R	1 FAILED 1293 N/R
		394 0485 SS 1500 Ohms 100E-12 F	5 N/R	3 FAILED 4000 N/R
		UN: 2 Diode, Rectifier, Fast Recovery	Not Applicable	
1N5802	UN:	2 Diode, Rectifier, Fast Recovery	Not Applicable	
		394 0485 SS 1500 Ohms 100E-12 F	5 N/R	3 FAILED 4000 N/R
1N5804	UN:	2 Diode, Rectifier, Fast Recovery	Not Applicable	
		394 0485 SS 1500 Ohms 100E-12 F	5 N/R	3 FAILED 4000 N/R
1N5806	MSI	2 Diode, Rectifier, Fast Recovery	Not Applicable	
		392 0986 SS 1500 Ohms 100E-12 F	1 N/R	5 PASSED 2750 A-C (+ -)

RAC ESD Database

Part Number	Part	Part ESD										Technology			
		Mfr	Class	Description	Test	Test	Test	Test	Test	Test	Test	Test	Test	General	
1N5807		SSS	2	Diode, Rectifier, Fast Recovery	Resistance	Capacitance	Pulses	Date	Code	Devices	Pin	Combination	Failure	Test	General
					Source	Date	Type	1500 Ohms	100E-12 F	5	N/R	11	FAILED	4000	N/R
					394	0495	SS						95	258	29
1N5809		UNI	2	Diode, Rectifier, Fast Recovery	Resistance	Capacitance	Pulses	Date	Code	Devices	Pin	Combination	Failure	Test	General
					Source	Date	Type	1500 Ohms	100E-12 F	1	N/R	5	PASSED	2750	A-C (+ -)
					392	1186	SS								
1N5811		MSC	3	Diode, Rectifier, Fast Recovery	Resistance	Capacitance	Pulses	Date	Code	Devices	Pin	Combination	Failure	Test	General
					Source	Date	Type	1500 Ohms	100E-12 F	18	N/R	5	PASSED	4000	N/R
					436	0498	SS								
1N5814		UNI	3	Diode, Rectifier, Fast Recovery	Resistance	Capacitance	Pulses	Date	Code	Devices	Pin	Combination	Failure	Test	General
					Source	Date	Type	1500 Ohms	100E-12 F	18	N/R	1	PASSED	4000	N/R
					436	1186	SS								
1N5814		SCN	3	Diode, Rectifier, Fast Recovery	Resistance	Capacitance	Pulses	Date	Code	Devices	Pin	Combination	Failure	Test	General
					Source	Date	Type	1500 Ohms	100E-12 F	18	N/R	5	PASSED	4000	N/R
					436	1186	SS								
1N5814		SSD	3	Diode, Rectifier, Fast Recovery	Resistance	Capacitance	Pulses	Date	Code	Devices	Pin	Combination	Failure	Test	General
					Source	Date	Type	1500 Ohms	100E-12 F	18	N/R	5	PASSED	4000	N/R
					436	0798	SS								
1N5819		MOT	2	Diode, Rectifier, Power Schottky	Resistance	Capacitance	Pulses	Date	Code	Devices	Pin	Combination	Failure	Test	General
					Source	Date	Type	1500 Ohms	100E-12 F	30	N/P	10	FAILED	3000	ANODE TO CATHODE
					490	1287	SS								

RAC ESD Database

Part Number	Part ESD		Part Description	Technology											
	Mfr	Class		Not Applicable										Failure Test	General Remarks
1N5819	SCN	1	Diode, Rectifier, Power Schottky	Test Source	Test Date	Test Resistance	Test Capacitance	Number Pulses	Date Code	Number Devices	Test Result	Test Voltage	Pin Combination	Criteria Remarks	Remarks
				404	1181	GN	1500 Ohms	100E-12 F	10	N/R	1	PASSED	1000	N/R	45
1N5822	SCN	1	Diode, Rectifier, Power Schottky	Not Applicable											
	404	1181	GN	1500 Ohms	100E-12 F	10	N/R	1	PASSED	1000	N/R	45	252	13	
1N6096	TRW	1	Diode, Rectifier, Power Schottky	Not Applicable											
	404	1181	GN	1500 Ohms	100E-12 F	10	N/R	1	PASSED	1000	N/R	45	252	13	
1N6101	FSC	2	Diode, Special Function, Diode Array	Not Applicable											
	436	1186	SS	1500 Ohms	100E-12 F	17	N/R	1	FAILED	3500	ANODE TO CATHODE	5	252	3	
1N6103A	MSC	3	Diode, Suppressor, Transient	Not Applicable											
	436	1186	SS	1500 Ohms	100E-12 F	18	N/R	1	PASSED	4000	N/R	5	252	3	
1N6173	MSC	3	Diode, Suppressor, Transient	Not Applicable											
	436	1186	SS	1500 Ohms	100E-12 F	18	N/R	1	PASSED	4000	N/R	5	252	3	
1N6305	UNI	3	Diode, Rectifier, Fast Recovery	Not Applicable											
	436	1186	SS	1500 Ohms	100E-12 F	18	N/R	5	PASSED	4000	N/R	5	252	3	
1N6324	MSC	3	Diode, Zener, Voltage Regulator	Not Applicable											
	436	1186	SS	1500 Ohms	100E-12 F	18	N/R	5	PASSED	4000	N/R	5	252	3	

RAC ESD Database

Part Number	Part ESD		Part Description		Technology			
	Mfr	Class	Resistance	Capacitance	Test	Test	Test	General
1N6324	MSC	3	Diode, Zener, Voltage Regulator					Not Applicable
	Test Date	Test Type	Test Resistance	Test Capacitance	Test Result	Test Voltage	Test Pin Combination	Failure Criteria
436	1186	SS	1500 Ohms	100E-12 F	5 PASSED	4000 N/R		Remarks
								5 252 3
1N6391	IRC	3	Diode, Microwave, Schottky Barrier					Not Applicable
402	0887	SS	1500 Ohms	100E-12 F	3 FAILED	10000 N/R		68 252 13
1N6392	IRC	3	Diode, Microwave, Schottky Barrier					Not Applicable
402	0887	SS	1500 Ohms	100E-12 F	3 FAILED	10000 N/R		68 252 13
1N6392	UNI	3	Diode, Microwave, Schottky Barrier					Not Applicable
436	1186	SS	1500 Ohms	100E-12 F	5 PASSED	4000 N/R		5 252 3
					5 PASSED	4000 N/R		5 252 3
1N64	AMP	3	Diode, Small Signal, General Purpose					Not Applicable
029	N/R	N/R	1500 Ohms	100E-12 F	1 FAILED	4829 N/R		102 189 13
1N643A	TRW	2	Diode, Small Signal, General Purpose					Not Applicable
029	N/R	N/R	1500 Ohms	100E-12 F	1 FAILED	3823 N/R		102 189 13
1N645	IIIT	N	Diode, Rectifier, Low Power					Not Applicable
029	N/R	N/R	1500 Ohms	100E-12 F	1 FAILED	16543 N/R		102 188 13
1N645	TEX	3	Diode, Rectifier, Low Power					Not Applicable
029	N/R	N/R	1500 Ohms	100E-12 F	1 FAILED	13591 N/R		102 189 13

RAC ESD Database

Part Number	Part	Part ESD		Part Description	Technology											
		Mfr	Class		Not Applicable											
1N645		N/R	2	Diode, Rectifier, Low Power												
		Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses	Number Code	Date Devices	Test Result	Test Voltage	Pin Combination	Failure Criteria	Test Remarks	General Remarks	
		030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	3800	N/R	103	252	13	
1N645-1		N/R	2	Diode, Rectifier, Low Power												
		030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	3800	N/R	103	252	13	
1N646		TEX	N	Diode, Rectifier, Low Power												
		029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	32048	N/R	102	189	13	
1N647		TEX	N	Diode, Rectifier, Low Power												
		029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	41545	N/R	102	189	13	
1N647		N/R	N	Diode, Rectifier, Low Power												
		232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	21384	N/R	102	184	13
1N647-1		TRW	N	Diode, Rectifier, Low Power												
		029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	41067	N/R	102	189	13	
1N647-1		MSC	3	Diode, Rectifier, Low Power												
		436	1186 SS	1500 Ohms	100E-12 F		18	N/R	31	PASSED	4000	N/R	5	252	3	
1N647-1		N/R	2	Diode, Rectifier, Low Power												
		030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	3800	N/R	103	252	13	

RAC ESD Database

Part Number	Part ESD		Part Description	Test										Number Date	Code Devices	Pulses	Test Result	Voltage	Pin Combination	Test	Failure Criteria	Test Remarks	General Remarks
	Mfr	Class		Test Type	Resistance	Capacitance	Ohms	Test	Test	Test	Test	Test	Test										
1N649	N/R	3	Diode, Rectifier, Low Power																			Technology Not Applicable	
1N658	FSC	N	Diode, Small Signal, General Purpose																			Not Applicable	
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 N/R	1 FAILED	22818	N/R													102 189 13	
1N6601	FSC	3	Diode, Small Signal, General Purpose																			Not Applicable	
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 N/R	1 FAILED	7597	N/R													102 188 13	
1N661	TEX	3	Diode, Small Signal, General Purpose																			Not Applicable	
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 N/R	1 FAILED	12421	N/R													102 189 13	
1N6621	FSC	3	Diode, Small Signal, General Purpose																			Not Applicable	
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 N/R	1 FAILED	10893	N/R													102 188 13	
1N702A	TEX	N	Diode, Zener, Voltage Regulator																			Not Applicable	
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 N/R	1 FAILED	29131	N/R													102 189 13	
1N711A	GEN	N	Diode, Zener, Voltage Regulator																			Not Applicable	
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 N/R	1 FAILED	42034	N/R													102 189 13	
1N746	VAR	3	Diode, Zener, Voltage Regulator																			Not Applicable	
402	SS	SS	1500 Ohms	100E-12 F	5 8523	3 8523	3 FAILED	8000	N/R													68 252 13	

RAC ESD Database

[illegible]

RAC ESD Database

Part Number	Part ESD		Part		Description		Technology	
	Mfr	Class	TEX	N	Diode, Zener, Voltage Regulator	Not Applicable	Not Applicable	Not Applicable
1N751A	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	73190 N/R
	Test Source	Test Date	Test Type	Resistance	Capacitance	Number	Test Result	Test Voltage
	MSC	1186	SS	1500 Ohms	100E-12 F	18	N/R	1 PASSED
	436	1186	SS	1500 Ohms	100E-12 F	18	N/R	4000 N/R
1N751A	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 PASSED	15300 N/R
	Test Source	Test Date	Test Type	Resistance	Capacitance	Number	Test Result	Test Voltage
	MSC	1186	SS	1500 Ohms	100E-12 F	18	N/R	5 PASSED
	436	1186	SS	1500 Ohms	100E-12 F	18	N/R	4000 N/R
1N751A-1	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	110477 N/R
	Test Source	Test Date	Test Type	Resistance	Capacitance	Number	Test Result	Test Voltage
	TRC	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1 FAILED
1N752A	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 PASSED	15300 N/R
	Test Source	Test Date	Test Type	Resistance	Capacitance	Number	Test Result	Test Voltage
	MSC	1186	SS	1500 Ohms	100E-12 F	18	N/R	5 PASSED
	436	1186	SS	1500 Ohms	100E-12 F	18	N/R	4000 N/R
1N752A	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	110477 N/R
	Test Source	Test Date	Test Type	Resistance	Capacitance	Number	Test Result	Test Voltage
	TRC	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1 FAILED
1N753	400	1287	SS	1500 Ohms	100E-12 F	400	N/R	40000 ANODE TO CATHODE
	Test Source	Test Date	Test Type	Resistance	Capacitance	Number	Test Result	Test Voltage
	MOT	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1 FAILED
1N753A	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	111218 N/R
	Test Source	Test Date	Test Type	Resistance	Capacitance	Number	Test Result	Test Voltage
	TRC	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1 FAILED

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Part Number	Part ESD		Part Description	Test				Technology	
	Mfr	Class		Test Date	Test Type	Resistance	Capacitance	Failure Criteria	Test Remarks
1N753A	MSC	3	Diode, Zener, Voltage Regulator	1186	SS	1500 Ohms	100E-12 F	5	252
1N753A	N/R	3	Diode, Zener, Voltage Regulator					Not Applicable	
030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	15000 N/R	103	252
1N753A-1	N/R	3	Diode, Zener, Voltage Regulator					Not Applicable	
030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	15300 N/R	103	252
1N753A-1	MSC	3	Diode, Zener, Voltage Regulator					Not Applicable	
436	1186	SS	1500 Ohms	100E-12 F	18	N/R	4000 N/R	5	252
1N754	MOT	N	Diode, Zener, Voltage Regulator					Not Applicable	
400	0188	SS	1500 Ohms	100E-12 F	400	N/R	43000 ANODE TO CATHODE	123	0
1N754A	NUC	N	Diode, Zener, Voltage Regulator					Not Applicable	
029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	31542 N/R	102	188
1N754A	MOT	3	Diode, Zener, Voltage Regulator					Not Applicable	
394	0485	SS	1500 Ohms	100E-12 F	10	N/R	4000 N/R	95	242
1N754A-1	N/R	3	Diode, Zener, Voltage Regulator					Not Applicable	
030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	15300 N/R	103	252

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Part Number	Part ESD		Part		Technology	
	Mfr	Class	Description		Not Applicable	
1N755	MOT	N	Diode, Zener, Voltage Regulator			
	Test Source	Test Date	Test Resistance	Test Capacitance	Test Pulses	Test Code
	400	0188	SS	1500 Ohms	100E-12 F	400 N/R
					10 PASSED	43000 ANODE TO CATHODE
1N755A	TRC	N	Diode, Zener, Voltage Regulator			
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
					1 FAILED	131406 N/R
1N755A-1	N/R	3	Diode, Zener, Voltage Regulator			
	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
					1 PASSED	15300 N/R
1N756	TRW	N	Diode, Zener, Voltage Regulator			
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
					1 FAILED	154666 N/R
1N756	MOT	N	Diode, Zener, Voltage Regulator			
	400	1287	SS	1500 Ohms	100E-12 F	400 N/R
					10 FAILED	40000 ANODE TO CATHODE
1N756A	N/R	3	Diode, Zener, Voltage Regulator			
	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
					1 PASSED	15300 N/R
1N756A-1	N/R	3	Diode, Zener, Voltage Regulator			
	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
					1 PASSED	15300 N/R
1N757	MOT	N	Diode, Zener, Voltage Regulator			
	400	1287	SS	1500 Ohms	100E-12 F	400 N/R
					10 FAILED	40000 ANODE TO CATHODE

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Part Number	Part ESD		Part Description	Test				Number Devices	Test		Pin Combination	Failure Test		General Remarks
	Mfr	Class		Test Date	Type	Resistance	Capacitance		Result	Voltage		Criteria	Remarks	
1N757A	TRC	N	Diode, Zener, Voltage Regulator	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	77547 N/R		102	188	13
1N757A	N/R	3	Diode, Zener, Voltage Regulator									Not Applicable		
030	N/R	N/R	150C Ohms	100E-12 F	1 N/R			1 PASSED		15300 N/R		103	252	13
1N757A-1	N/R	3	Diode, Zener, Voltage Regulator									Not Applicable		
030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R			1 PASSED		15300 N/R		103	252	13
1N758	MOT	N	Diode, Zener, Voltage Regulator									Not Applicable		
400	1287 SS	1500 Ohms	100E-12 F	400 N/R				10 FAILED		40000 ANODE TO CATHODE		122	0	10
1N758A	TRC	N	Diode, Zener, Voltage Regulator									Not Applicable		
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R			1 FAILED		76779 N/R		102	188	13
1N758A	N/R	3	Diode, Zener, Voltage Regulator									Not Applicable		
030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R			1 PASSED		15300 N/R		103	252	13
1N758A-1	N/R	3	Diode, Zener, Voltage Regulator									Not Applicable		
030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R			1 PASSED		15300 N/R		103	252	13
1N758A-1	MOT	3	Diode, Zener, Voltage Regulator									Not Applicable		
394	0485 SS	1500 Ohms	100E-12 F	10 N/R				11 PASSED		4000 N/R		95	252	29

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Part Number	Part ESD		Part		Description		Technology	
	Mfr	Class	Mfr	Class	Description		Not Applicable	
1N759	MOT	N			Diode, Zener, Voltage Regulator		Not Applicable	
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Voltage	Test Result	Test Pin Combination
	400	0188	SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED	43000 ANODE TO CATHODE
1N759A	N/R	N/R	3	Diode, Zener, Voltage Regulator				
	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 PASSED	15300 N/R
1N759A-1	N/R	N/R	3	Diode, Zener, Voltage Regulator				
	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 PASSED	15300 N/R
1N759A-1	MOT	3	Diode, Zener, Voltage Regulator					
	394	0485	SS	1500 Ohms	100E-12 F	10 N/R	11 PASSED	4000 N/R
1N763-2	DIC	N	Diode, Zener, Voltage Regulator					
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	51343 N/R
1N781	MAS	1	Diode, Microwave					
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	1033 N/R
1N788	ALP	1	Diode, Microwave					
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	828 N/R
1N78CR	ALP	1	Diode, Microwave					
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	1334 N/R

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Part Number	Part ESD		Part Description	Test										Technology			
	Mfr	Class		Test Type	Resistance	Capacitance	Pulses	Code	Number Devices	Test Result	Voltage	Pin Combination	Failure Criteria	Test Remarks	General Remarks		
1N780	ALP	1	Diode, Microwave	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	1266	N/R	102	189	13
1N816	TRC	N	Diode, Small Signal, Switching	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	36252	N/R	102	189	13
1N8161	IIT	N	Diode, Small Signal, General Purpose	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	67756	N/R	102	189	13
1N821	N/R	3	Diode, Zener, Voltage Reference	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	165166	N/R	102	188	13
				030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	PASSED	15300	N/R	103	252	13
1N821	MOT	N	Diode, Zener, Voltage Reference	400	0188	SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	N/R	123	0	10
1N823	TRC	N	Diode, Zener, Voltage Reference	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	39731	N/R	102	189	13
1N823	N/R	3	Diode, Zener, Voltage Reference	030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	PASSED	15300	N/R	103	252	13

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Part Number	(Cont'd)	Part ESD		Part Description								Technology	
		Mfr Class	Class									Not Applicable	
1N823		MOT	N	Diode, Zener, Voltage Reference									
		Test Source	Test Date	Test Resistance	Test Capacitance	Test Pulses	Number Code	Date N/R	Devices	Test Result	Test Voltage	Test Pin Combination	General Remarks
		400	0188 SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	N/R	123	0 10
1N823		VAR	3	Diode, Zener, Voltage Reference									Not Applicable
		402	0887 SS	1500 Ohms	100E-12 F	5	N/R	4	FAILED	10000	N/R	68	252 13
1N825		MOT	N	Diode, Zener, Voltage Reference									Not Applicable
		400	0188 SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	N/R	123	0 10
1N827		N/R	N	Diode, Zener, Voltage Reference									Not Applicable
		026	0178 SS	100 Ohms	200E-12 F	1	N/R	4	FAILED	6000	C(+) A(-)	98	285 13
1N827		MOT	N	Diode, Zener, Voltage Reference									Not Applicable
		400	0188 SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0 10
1N827		VAR	3	Diode, Zener, Voltage Reference									Not Applicable
		402	0887 SS	1500 Ohms	100E-12 F	5	N/R	3	FAILED	10000	N/R	68	252 13
1N829		N/R	3	Diode, Zener, Voltage Reference									Not Applicable
		030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	PASSED	1530U	N/R	103 252 13
		232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	9080	N/R 102 184 13

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Part Number	(Cont'd)	Part ESD		Part Description		Voltage Reference				Test				Technology					
		Mfr	Class	Mfr	Class	Test	Resistance	Capacitance	Pulses	Date	Code	Devices	Test	Result	Voltage	Pin Combination	Failure Criteria	Test Remarks	General Remarks
1N829		MOT	N	Diode, Zener, Voltage Reference													123	0	10
1N829-1		MSC	3	Diode, Zener, Voltage Reference													Not Applicable		
	436	0488	SS	1500 Ohms	100E-12 F	18	N/R	2	PASSED	4000	N/R						5	252	3
	436	1186	SS	1500 Ohms	100E-12 F	18	N/R	5	PASSED	4000	N/R						5	252	3
								5	PASSED	4000	N/R						5	252	3
	436	0588	SS	1500 Ohms	100E-12 F	18	N/R	3	PASSED	4000	N/R						5	252	3
1N829-1		NSC	3	Diode, Zener, Voltage Reference													Not Applicable		
	436	1186	SS	1500 Ohms	100E-12 F	18	N/R	5	PASSED	4000	N/R						5	2.2	3
1N82A		NUC	1	Diode, Microwave, Point Contact													Not Applicable		
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	579	N/R						102	189	13
1N82A		ALP	1	Diode, Microwave, Point Contact													Not Applicable		
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	1200	N/R						102	189	13
1N914		TEX	3	Diode, Small Signal, General Purpose													Not Applicable		
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	6256	N/R						102	189	13
1N914		N/R	3	Diode, Small Signal, General Purpose													Not Applicable		
	030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	11000	N/R						103	252	13

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Part Number	Part ESC		Part Description		Technology	
	Mfr	Class	Test	Test	Failure Criteria	Test Remarks
1N9141	FSC	2	Diode, Small Signal, General Purpose	Not Applicable	Not Applicable	13
1N916	N/R	N	Diode, Small Signal, General Purpose	Not Applicable	Not Applicable	13
1N933J	IRC	3	Diode, Small Signal, General Purpose	Not Applicable	Not Applicable	13
1N938B	N/R	3	Diode, Zener, Voltage Reference	Not Applicable	Not Applicable	13
1N939B	MSI	3	Diode, Zener, Voltage Reference	Not Applicable	Not Applicable	29
1N941	MOT	N	Diode, Zener, Voltage Reference	Not Applicable	Not Applicable	10
1N945B	N/R	3	Diode, Zener, Voltage Reference	Not Applicable	Not Applicable	13
1N945J	MOT	N	Diode, Zener, Voltage Reference	Not Applicable	Not Applicable	10

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Part Number	Part ESD		Part Description		Technology	
	Mfr	Class	Test	Test	Failure Criteria	Test Remarks
1N964B	FSC	N	Diode, Zener, Voltage Regulator	Not Applicable	Not Applicable	
1N965	MOT	N	Diode, Zener, Voltage Regulator	Not Applicable	Not Applicable	
400	0138 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED	43000 ANODE TO CATHODE
1N965B	DIC	N	Diode, Zener, Voltage Regulator	Not Applicable	Not Applicable	
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED
1N965B	MOT	N	Diode, Zener, Voltage Regulator	Not Applicable	Not Applicable	
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED
1N965B-1	N/R	3	Diode, Zener, Voltage Regulator	Not Applicable	Not Applicable	
030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 PASSED
1N966	MOT	N	Diode, Zener, Voltage Regulator	Not Applicable	Not Applicable	
400	1287 SS	1500 Ohms	100E-12 F	400 N/R	10 FAILED	40000 ANODE TO CATHODE
1N966B-1	MOT	3	Diode, Zener, Voltage Regulator	Not Applicable	Not Applicable	
324	0495 SS	1500 Ohms	100E-12 F	10 N/R	11 PASSED	4000 N/R
1N967	MOT	N	Diode, Zener, Voltage Regulator	Not Applicable	Not Applicable	
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED

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Part Number	(Cont'd)	Part ESD		Part Description	Technology															
		Mfr Class	Part		Test Date	Test Type	Resistance	Capacitance	Pulses	Code	Number	Test Result	Test Voltage	Pin Combination	Failure Criteria	Test Remarks	General Remarks			
1N967		MOT	N	Diode, Zener, Voltage Regulator	400	1287	SS	1500	Ohms	100E-12	F	400	N/R	10	FAILED	40000	ANODE TO CATHODE	122	0	10
1N967B-1		N/R	3	Diode, Zener, Voltage Regulator	030	N/R	N/R	1500	Ohms	100E-12	F	1	N/R	1	PASSED	15300	N/R	103	252	13
1N968		MOT	N	Diode, Zener, Voltage Regulator	400	1287	SS	1500	Ohms	100E-12	F	400	N/R	10	FAILED	40000	ANODE TO CATHODE	122	0	10
1N968B		N/R	3	Diode, Zener, Voltage Regulator	030	N/R	N/R	1500	Ohms	100E-12	F	1	N/R	1	FAILED	15000	N/R	103	252	13
1N969		MOT	N	Diode, Zener, Voltage Regulator	400	0188	SS	1500	Ohms	100E-12	F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0	10
1N970B		DIC	N	Diode, Zener, Voltage Regulator	029	N/R	N/R	1500	Ohms	100E-12	F	1	N/R	1	FAILED	84360	N/R	102	188	13
1N971		MCT	N	Diode, Zener, Voltage Regulator	400	1287	SS	1500	Ohms	100E-12	F	400	N/R	10	FAILED	40000	ANODE TO CATHODE	122	0	10
1N971B-1		MOT	3	Diode, Zener, Voltage Regulator	394	0485	SS	1500	Ohms	100E-12	F	10	N/R	11	PASSED	4000	N/R	95	252	29

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Part Number	Part Description		Technology											
	Mfr Class	Part	Not Applicable											
1N972B	N Diode, Zener, Voltage Regulator													
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses	Number Devices	Date Code	Test Result	Test Voltage	Test Pin Combination	Failure Criteria	Test Remarks	General Remarks
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	120865	N/R	102	188	13
1N973	MOT N Diode, Zener, Voltage Regulator													
	400	0188	SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0	10
1N973B	HAU N Diode, Zener, Voltage Regulator													
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	730704	N/R	102	188	13
1N974	MOT N Diode, Zener, Voltage Regulator													
	400	1287	SS	1500 Ohms	100E-12 F	400	N/R	10	FAILED	40000	ANODE TO CATHODE	122	0	10
1N974B	MOT N Diode, Zener, Voltage Regulator													
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	76205	N/R	102	188	13
1N976	MOT N Diode, Zener, Voltage Regulator													
	400	0188	SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0	10
1N981	MOT N Diode, Zener, Voltage Regulator													
	400	0188	SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0	10
1N981B	MOT N Diode, Zener, Voltage Regulator													
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	32082	N/R	102	189	13

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Part Number	Part ESD		Part Description	Diode, Zener, Voltage Regulator										Technology			
	Mfr	Class		Test Date	Test Type	Resistance	Capacitance	Pulses	Date	Number	Code	Devices	Test Result	Test Voltage	Pin Combination	Failure Criteria	Test Remarks
1N985	MOT	N	Diode, Zener, Voltage Regulator	400	0188 SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0	10	
1N987	MOT	N	Diode, Zener, Voltage Regulator	400	0188 SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0	10	
1N988	MOT	N	Diode, Zener, Voltage Regulator	400	0188 SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	ANODE TO CATHODE	123	0	10	
1N9928	MOT	N	Diode, Zener, Voltage Regulator	400	1287 SS	1500 Ohms	100E-12 F	400	N/R	10	FAILED	40000	ANODE TO CATHODE	122	0	10	
2023-10	MAS	1	Transistor, Microwave/RF	410	1181 GN	1500 Ohms	100E-12 F	10	N/R	1	PASSED	1000	N/R	102	252	13	
2N10168	WES	N	Transistor, High Power, NPN	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	37440 E(+) B(-)	102	189	13	
2N1039	TEX	N	Transistor, High Power, NPN	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	34323 B(+) E(-)	102	189	13	
2N1099	DEL	N	Transistor, High Power, NPN	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	27917 B(+) E(-)	102	189	13	

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Part Number	Part ESD		Part		Technology									
	Mfr	Class	Description	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	
2N1204	MOT	2	Transistor, Low Power, PNP											
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses	Number Code	Date Devices	Test Result	Test Voltage	Pin Combination	Failure Criteria	Test Remarks	
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	2787	B(+) E(-)	102	189	
2N1303	TEX	1	Transistor, Low Power, PNP											
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	1892	E(+) B(-)	102	188	
2N1308	GI	3	Transistor, Low Power, PNP											
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	8272	E(+) B(-)	102	189	
2N1469	SOL	N	Transistor, Low Power, PNP											
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	23857	B(+) E(-)	102	189	
2N1485	SEN	N	Transistor, Low Power, NPN											
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	41077	E(+) B(-)	102	188	
2N1486	SEN	N	Transistor, Low Power, NPN											
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	36839	E(+) B(-)	102	188	
2N1486	PPC	3	Transistor, Low Power, NPN											
	436	0588	SS	1500 Ohms	100E-12 F	18	N/R	3	PASSED	4000	N/R	5	252	
								3	PASSED	4000	N/R	5	252	
2N1596	TEX	N	Thyristor, SiR											
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	24381	B(+) E(-)	102	189	

RAC ESD Database

Part Number	Part ESD		Part		Technology	
	Mfr Class		Description		Not Applicable	
	N/R	N	Thyristor, SCR			
2N1602	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
2N1613	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
2N1642	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
2N1711	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
2N1711	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
2N1711	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
2N176	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R

RAC ESD Database

Part Number	Part ESD		Part		Technology	
	Mfr	Class	Description		Not Applicable	
2N1774A	N/R	N/R	3 Thyristor, SCR			
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Number
	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
						1 FAILED
						15000 N/R
						103 252 13
2N1777A	GE	N	Thyristor, SCR			Not Applicable
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED
						59685 B(+) E(-)
						102 189 13
2N1893	FSC	N	Transistor, Low Power, NPN			Not Applicable
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED
						18535 E(+) B(-)
						102 189 13
2N1893	MOT	3	Transistor, Low Power, NPN			Not Applicable
400	1287 SS	1500 Ohms	100E-12 F	127 N/R	10 FAILED	12700 REV. BIAS E TO B
						122 0 10
2N190	ETC	N	Transistor, Low Power, PNP			Not Applicable
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED
						22735 B(+) E(-)
						102 189 13
2N2060	N/R	3	Transistor, Multiple, Diffn. Amplifier			Not Applicable
232	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED
						103 184 13
2N2060	MOT	N	Transistor, Multiple, Diffn. Amplifier			Not Applicable
400	0188 SS	1500 Ohms	100E-12 F	10 N/R	10 PASSED	43000 REV. BIAS E TO B
						103 0 10
2N2102	NSC	N	Transistor, High Power, NPN			Not Applicable
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED
						19409 E(+) B(-)
						102 188 13

RAC ESD Database

Part Number	Part ESD		Part		Technology			
	Mfr Class	Description	Test Date	Test Type	Failure Criteria	General Remarks		
2N2105	NSC	2 Transistor, Low Power, PNP	0184 SS	1500 Ohms	100E-12 F	11 N/R	102 252 13	
2N2151	N/R	N Transistor, High Power, NPN	232 N/R	N/R	Ohms	100E-12 F	1 N/R	Not Applicable
2N2198	ETC	N Transistor, Low Power, NPN	029 N/R	N/R	1500 Ohms	100E-12 F	1 N/R	Not Applicable
2N2219	MOT	3 Transistor, Low Power, NPN	400 1287 SS	1500 Ohms	100E-12 F	89 N/R	10 10	Not Applicable
2N2219A	N/R	3 Transistor, Low Power, NPN	232 N/R	N/R	Ohms	100E-12 F	1 N/R	Not Applicable
2N2219A	MOT	2 Transistor, Low Power, NPN	436 1186 SS	1500 Ohms	100E-12 F	16 N/R	5 172 3	Not Applicable
2N2222	FSC	3 Transistor, Low Power, NPN	029 N/R	N/R	1500 Ohms	100E-12 F	1 N/R	Not Applicable
2N2222	MOT	3 Transistor, Low Power, NPN	400 1287 SS	1500 Ohms	100E-12 F	96 N/R	10 10	Not Applicable

RAC ESD Database

Part Number	(Cont'd)	Part ESD		Part Description	Test										Technology			
		Mfr	Class		Source	Date	Type	Resistance	Capacitance	Pulses	Number	Date	Devices	Code	Voltage	Pin Combination	Failure Criteria	Test Remarks
2N2222		N/R	3	Transistor, Low Power, NPN	048	N/R	SS	100 Ohms	218E-12 F	1	N/R	1	FAILED	1000 V	N/R	15	252	23
2N2222A		IIT	3	Transistor, Low Power, NPN	026	0178	SS	100 Ohms	200E-12 F	1	N/R	4	FAILED	1600 E(+) B(-)		64	285	13
2N2222A		MOT	1	Transistor, Low Power, NPN	402	0887	SS	1500 Ohms	100E-12 F	5	N/R	24	FAILED	4000 N/R		68	279	13
					436	1186	SS	1500 Ohms	100E-12 F	13	N/R	3	FAILED	1800 BASE TO COLLECTOR		5	252	3
					436	1186	SS	1500 Ohms	100E-12 F	16	N/R	1	FAILED	3000 EMITTER TO BASE		5	252	3
					436	1186	SS	1500 Ohms	100E-12 F	18	N/R	31	PASSED	4000 N/R		5	252	3
					436	1186	SS	1500 Ohms	100E-12 F	5	N/R	1	FAILED	600 BASE TO COLLECTOR		5	252	3
					436	1186	SS	1500 Ohms	100E-12 F	15	N/R	25	FAILED	2500 COLLECTOR TO BASE		5	252	3
					436	1186	SS	1500 Ohms	100E-12 F	17	N/R	5	FAILED	3500 EMITTER TO BASE		5	252	3
					436	1186	SS	1500 Ohms	100E-12 F	16	N/R	16	FAILED	3000 E TO B AND C TO B		5	252	3
2N2222A		RAY	2	Transistor, Low Power, NPN	436	1186	SS	1500 Ohms	100E-12 F	18	N/R	1	PASSED	4000 N/R		5	252	3
					436	1186	SS	1500 Ohms	100E-12 F	16	N/R	5	FAILED	3000 EMITTER TO BASE		5	252	3
2N2222A		N/R	3	Transistor, Low Power, NPN	030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	10000 N/R		103	252	13

RAC ESD Database

Part Number	(Cont'd)	Part ESD		Part Description	Technology											
		Mfr	Class		Not Applicable											
2N2222A		N/R	3	Transistor, Low Power, NPN												
		Test Source	Test Type	Test Resistance	Test Capacitance	Number Pulses	Date Code	Number Devices	Test Result	Test Voltage	Pin Combination	Failure Criteria	Test Remarks	General Remarks		
		051	N/R	SS	1500 Ohms	100E-12 F	1 N/R	10	PASSED	7914	N/R	102	252	13		
		232	N/R	N/R	N/R	Ohms	100E-12 F	1 N/R	1	FAILED	7914	N/R	102	184	13	
2N2297		FSC	N	Transistor, Low Power, NPN								Not Applicable				
		029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1	FAILED	20754	E(+) B(-)	102	189	13		
2N2297		RAY	N	Transistor, Low Power, NPN								Not Applicable				
		029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1	FAILED	20754	E(+) B(-)	102	189	13		
								1	FAILED	24490	E(+) B(-)	102	189	13		
2N2323		GE	N	Thyristor, SCR								Not Applicable				
		029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1	FAILED	16543	E(+) B(-)	102	189	13		
2N2323		UNI	3	Thyristor, SCR								Not Applicable				
		436	1186	SS	1500 Ohms	100E-12 F	18 N/R	2	PASSED	4000	N/R	5	252	3		
2N2323A		TEL	1	Thyristor, SCR								Not Applicable				
		436	1186	SS	1500 Ohms	100E-12 F	5 N/R	2	FAILED	600	COLLECTOR TO BASE	5	252	3		
2N2326		UNI	2	Thyristor, SCR								Not Applicable				
		392	0986	SS	1500 Ohms	100E-12 F	1 N/R	5	FAILED	3000	A-C (+ -)	19	255	13		

RAC ESD Database

Part Number	Part ESD		Part Description	Technology													
	Mfr	Class		Not Applicable													
2N2346	GE	N	Thyristor, SCR														
	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test
	Source	Date	Type	Resistance	Capacitance	Pulses	Code	Devices	Pin	Combination	Voltage	Pin	Combination	Failure	Test	General	Remarks
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	58170 E(+)	B(-)	102	189	13			
2N2369	MOI	2	Transistor, Low Power, NPN														
	400	1287	SS	1500 Ohms	100E-12 F	22	N/R	10	FAILED	2200 REV.	BIAS E TO B	122	0	10			
	402	0887	SS	1500 Ohms	100E-12 F	5	N/R	1	FAILED	6000 N/R		68	280	13			
2N2369A	N/R	2	Transistor, Low Power, NPN														
	030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	4000 N/R		103	252	13			
	048	N/R	SS	100 Ohms	218E-12 F	1	N/R	1	FAILED	460 N/R		15	252	23			
	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	4293 N/R	102	184	13			
2N2405	N/R	3	Transistor, High Power, NPN														
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	15646 E(+)	B(-)	102	188	13			
2N2432	TEX	3	Transistor, Special Function, Chopper, Dual Emitter														
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	7764 E(+)	B(-)	102	188	13			
2N2432A	N/R	2	Transistor, Special Function, Chopper, Dual Emitter														
	048	N/R	SS	100 Ohms	218E-12 F	1	N/P	1	FAILED	620 N/R		15	252	23			
2N2453	FSC	3	Transistor, Low Power, NPN														
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	8109 E(+)	B(-)	102	189	13			

RAC ESD Database

Part Number	ESD Class	Part Description	Technology	
			Not Applicable	Not Applicable
2N2453	MOT	3 Transistor, Low Power, NPN	Failure Test	General Remarks
			Criteria Remarks	13
2N2481	FSC	3 Transistor, Low Power, NPN	102	189
			Not Applicable	13
2N2483	FSC	3 Transistor, Low Power, NPN	102	188
			Not Applicable	13
2N2484	FSC	3 Transistor, Low Power, NPN	102	188
			Not Applicable	13
2N2484	MOT	3 Transistor, Low Power, NPN	102	188
			Not Applicable	13
2N2484	N/R	3 Transistor, Low Power, NPN	102	188
			Not Applicable	13
2N2540	N/R	3 Transistor, Low Power, NPN	103	252
			Not Applicable	23

RAC ESD Database

Part Number	Part ESD		Part Description		Technology			
	Mfr	Class	Test	Test	Number	Test	Test	General
2N2608	N/R	1	Transistor, Field Effect, Junction, P-Channel	1 N/R	1	FAILED	320 N/R	Not Applicable
	Test Date	Test Type	Resistance	Capacitance	Pulses	Code	Devices	Pin Combination
	048	N/R	SS	100 Ohms	218E-12 F	1	FAILED	320 N/R
2N2608	MOT	1	Transistor, Field Effect, Junction, P-Channel	5 N/R	10	FAILED	460 REV. BIAS E TO B	Not Applicable
	400	1287	SS	1500 Ohms	100E-12 F	5	N/R	10
2N2609	N/R	2	Transistor, Field Effect, Junction, P-Channel	1 N/R	1	FAILED	3000 N/R	Not Applicable
	030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	103
2N2609	MOT	1	Transistor, Field Effect, Junction, P-Channel	8 N/R	10	FAILED	770 REV. BIAS E TO B	Not Applicable
	400	1287	SS	1500 Ohms	100E-12 F	8	N/R	10
2N2708	ETC	2	Transistor, Low Power, NPN	1 N/R	1	FAILED	2216 E(+) B(-)	Not Applicable
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	102
2N2801	FSC	3	Transistor, Low Power, PNP	1 N/R	1	FAILED	9644 B(+) E(-)	Not Applicable
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	102
2N2801	MOT	3	Transistor, Low Power, PNP	1 N/R	1	FAILED	13744 B(+) E(-)	Not Applicable
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	102
2N2857	N/R	1	Transistor, Microwave/RF, Bipolar	30 N/R	5	FAILED	1500 N/R	Not Applicable
	028	N/R	SS	1500 Ohms	117E-12 F	30	N/R	115

RAC ESD Database

Part Number	Part	Part ESD		Description	Technology													
		Mfr	Class		Test Date	Test Type	Resistance	Capacitance	Pulses	Date Code	Number Devices	Test Result	Voltage Pin Combination	Failure Criteria	Test Remarks	General Remarks		
2N2857	MOT	1		Transistor, Microwave/RF, Bipolar	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	2741 E(+) B(-)	102	188	13	
					026	0178	SS	100 Ohms	200E-12 F	1	N/R	4	FAILED	290 E(+) B(-)	66	285	13	
					400	1287	SS	1500 Ohms	100E-12 F	9	N/R	10	FAILED	900 REV. BIAS E TO B	122	0	10	
2N2857	VAR	2		Transistor, Microwave/RF, Bipolar	402	0787	SS	1500 Ohms	100E-12 F	5	N/R	4	FAILED	2250 N/R	68	252	13	
2N2894	RAY	3		Transistor, Low Power, PNP	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	5405 B(+) E(-)	102	188	13	
2N2894	MOT	2		Transistor, Low Power, PNP	402	0787	SS	1500 Ohms	100E-12 F	5	N/R	5	FAILED	3000 N/R	68	252	13	
2N2896	MOT	3		Transistor, Low Power, NPN	400	1287	SS	1500 Ohms	100E-12 F	130	N/R	10	FAILED	13000 REV. BIAS E TO B	122	0	10	
2N2904A	N/R	3		Transistor, Low Power, NPN	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	7189 N/R	102	184	13
2N2905	N/R	3		Transistor, Low Power, PNP	030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	11000 N/R	103	252	13	

Part Number	Part ESD		Part Description	Test										Technology					
	Mfr	Class		Test Type	Resistance	Capacitance	Pulses	Code	Devices	Result	Test Voltage	Pin Combination	Failure Criteria	Test Remarks	General Remarks				
2N2905	N/R	3	Transistor, Low Power, PNP	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	7189	N/R	102	184	13	Not Applicable
2N2905	MOT	N	Transistor, Low Power, PNP	400	1287	SS	1500	Ohms	100E-12 F	250	N/R	10	FAILED	24140	REV. BIAS E TO B	122	0	10	Not Applicable
2N2905A	N/R	3	Transistor, Low Power, PNP	030	N/R	N/R	1500	Ohms	100E-12 F	1	N/R	1	FAILED	11300	N/R	103	252	13	Not Applicable
2N2905A	RAY	3	Transistor, Low Power, PNP	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	7189	N/R	102	184	13	Not Applicable
2N2905A	MOT	3	Transistor, Low Power, PNP	436	0588	SS	1500	Ohms	100E-12 F	18	N/R	5	PASSED	4000	N/R	5	252	3	Not Applicable
2N2905A	MOT	3	Transistor, Low Power, PNP	436	1186	SS	1500	Ohms	100E-12 F	18	N/R	5	PASSED	4000	N/R	5	252	3	Not Applicable
2N2905A	MOT	3	Transistor, Low Power, PNP	436	1186	SS	1500	Ohms	100E-12 F	18	N/R	5	PASSED	4000	N/R	5	252	3	Not Applicable
2N2906	MOT	3	Transistor, Low Power, PNP	029	N/R	N/R	1500	Ohms	100E-12 F	1	N/R	1	FAILED	6018	B(+) E(-)	102	189	13	Not Applicable
2N2907	MOT	2	Transistor, Low Power, PNP	029	N/R	N/R	1500	Ohms	100E-12 F	1	N/R	1	FAILED	10914	B(+) E(-)	102	189	13	Not Applicable

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Part Number	Part ESD		Part		Technology	
	Mfr	Class	Description		Not Applicable	Not Applicable
2N2907	MOT	2	Transistor, Low Power, PNP			
	Test Date	Test Type	Test Resistance	Test Capacitance	Test Result	Test Voltage
400	1287	SS	1500 Ohms	100E-12 F	10 FAILED	17100 REV. BIAS E TO B
402	0887	SS	1500 Ohms	100E-12 F	5 FAILED	4000 N/R
2N2907	N/R	3	Transistor, Low Power, PNP			
048	N/R	SS	100 Ohms	218E-12 F	1 FAILED	1200 N/R
2N2907A	MOT	3	Transistor, Low Power, PNP			
029	N/R	N/R	1500 Ohms	100E-12 F	1 FAILED	9185 B(+) E(-)
436	1186	SS	1500 Ohms	100E-12 F	5 PASSED	4000 N/R
					5 PASSED	4000 N/R
2N2907A	NSC	3	Transistor, Low Power, PNP			
026	0178	SS	100 Ohms	200E-12 F	4 FAILED	2250 B(+) E(-)
2N2907A	RAY	3	Transistor, Low Power, PNP			
436	1186	SS	1500 Ohms	100E-12 F	3 PASSED	4000 N/R
					5 PASSED	4000 N/R
2N2907A	N/R	3	Transistor, Low Power, PNP			
051	N/R	SS	1500 Ohms	100E-12 F	9 PASSED	4000 N/R
					1 FAILED	10000 N/R

RAC ESD Database

Part Number	Part ESD		Part		Technology									
	Mfr	Class	Description	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	
2N2919	MOT	N	Transistor, Multiple, Differ. Amplifier											
	Test	Test	Test	Number	Test	Test	Test	Test	Test	Test	Test	Test	Test	
	Source	Date	Type	Resistance	Capacitance	Pulses	Code	Devices	Result	Voltage	Pin	Combination	Remarks	
	400	0188	SS	1500 Ohms	100E-12 F	51	N/R	10	PASSED	43000 REV.	BIAS E TO B		123 0 10	
2N2920	FSC	3	Transistor, Multiple, Differ. Amplifier										Not Applicable	
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	5682 E(+) B(-)			102 189 13	
2N2920	MOT	3	Transistor, Multiple, Differ. Amplifier										Not Applicable	
	400	1287	SS	1500 Ohms	100E-12 F	68	N/R	10	FAILED	6800 REV.	BIAS E TO B		122 0 10	
2N2945	MOT	2	Transistor, Special Function, Chopper										Not Applicable	
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	2450 B(+) E(-)			102 188 13	
2N2946A	N/R	3	Transistor, Special Function, Chopper										Not Applicable	
	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	6093 N/R		102 184 13	
2N297A	BEN	N	Transistor, High Power, NPN										Not Applicable	
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	32094 B(+) E(-)			102 189 13	
2N297A	MOT	N	Transistor, High Power, NPN										Not Applicable	
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	26387 B(+) E(-)			102 189 13	
2N3013	MOT	3	Transistor, Low Power, NPN										Not Applicable	
	400	1287	SS	1500 Ohms	100E-12 F	123	N/R	10	FAILED	12300 REV.	BIAS E TO C 3		122 0 10	

RAC ESD Database

Part Number	Part ESD		Part Description	Technology											
	Mfr Class	Class		Not Applicable											
2N3019	RAY	N	Transistor, Low Power, NPN												
	Test Source	Test Date	Test Type	Resistance	Capacitance	Test Pulses	Number Code	Date	Test Result	Test Voltage	Pin Combination	Failure Criteria	Test Remarks	General Remarks	
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	18706 E(+)	B(-)	102	188	13	
2N3019	MOT	3	Transistor, Low Power, NPN												
	400	1287 SS	1500 Ohms	100E-12 F	159	N/R	10	FAILED	15900 REV.	BIAS E TO B	122	0	10		
	N/R	3	Transistor, Low Power, NPN												
2N3019	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	12000	N/R	103	252	13		
	232	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	12492	N/R	102	184	13	
	VAR	3	Transistor, Low Power, NPN												
2N3019	VAR	3	1500 Ohms	100E-12 F	5	N/R	10	FAILED	6000	N/R	68	252	13		
	402	0787 SS	1500 Ohms	100E-12 F	5	N/R	10	FAILED	6000	N/R	68	252	13		
	N/R	3	Thyristor, SCR												
2N3030	N/R	3	100 Ohms	218E-12 F	1	N/R	1	FAILED	1000	N/R	17	252	23		
	048	N/R	SS	100 Ohms	218E-12 F	1	N/R	1	FAILED	1000	N/R	17	252	23	
	N/R	N	Transistor, High Power, NPN												
2N3055	N/R	N	Ohms	100E-12 F	1	N/R	1	FAILED	66396	N/R	102	184	13		
	232	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	66396	N/R	102	184	13	
	N/R	N	Transistor, High Power, NPN												
2N3057	MSC	3	1500 Ohms	100E-12 F	1	N/R	1	FAILED	10840 E(+)	B(-)	102	188	13		
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	10840 E(+)	B(-)	102	188	13	
	N/R	3	Transistor, Low Power, NPN												

RAC ESD Database

Part Number	Part ESD		Part Description	Technology												
	Mfr	Class		Not Applicable												
2N3112	N/R	2	Transistor, Field Effect, Junction, P-Channel													
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses	Number	Date	Devices	Test Result	Test Voltage	Test Pin	Test Combination	Failure Criteria	Test Remarks	General Remarks
	048	N/R	SS	100 Ohms	218E-12 F	1	N/R	1	FAILED	530	N/R			16	252	23
2N3114	FSC	3	Transistor, Low Power, NPN													
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	10564	E(+)	B(-)		102	188	13
2N3117	N/R	3	Transistor, Low Power, NPN													
	048	N/R	SS	100 Ohms	218E-12 F	1	N/R	1	FAILED	1000	N/R			15	252	23
2N3227	MOT	3	Transistor, Low Power, NPN													
	400	1287	SS	1500 Ohms	100E-12 F	72	N/R	10	FAILED	7200	REV.	BIAS	E TO B	122	0	10
2N3250A	N/R	3	Transistor, Low Power, PNP													
	232	N/R	N/R	N/R Ohms	100E-12 F	1	N/R	1	FAILED	6205	N/R			102	184	13
2N3251	RAY	3	Transistor, Low Power, PNP													
	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	6064	B(+)	E(-)		102	188	13
2N3251	MOT	3	Transistor, Low Power, PNP													
	400	1287	SS	1500 Ohms	100E-12 F	115	N/R	10	FAILED	11500	REV.	BIAS	E TO B	122	0	10
	400	0188	SS	1500 Ohms	100E-12 F	41	N/R	10	PASSED	43000	REV.	BIAS	E TO B	123	0	10

RAC ESD Database

Part Number	Part ESD		Part Description		Test		Number Date		Test		Test		Failure Test		General	
	Mfr	Class	Description		Test	Test	Pul	es	Code	Devices	Result	Voltage	Pin	Combination	Criteria	Remarks
2N3251A	N/R	2	Transistor, Low Power, PNP		Source	Resistance	Capacitance	100E-12 F	1 N/R	1 N/R	1 FAILED	3655 N/R	102	184	13	13
2N3253	N/R	3	Transistor, Low Power, NPN		232	N/R	N/R	Ohms	100E-12 F	1 N/R	1 FAILED	12363 N/R	102	184	13	13
2N3253	MOT	N	Transistor, Low Power, NPN		400	1287 SS	1500 Ohms	100E-12 F	300 N/R	10	FAILED	29710 REV. BIAS E TO B	122	0	10	10
2N329	RAY	3	Transistor, Low Power, PNP		029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	14000 B(+) E(-)	102	189	13	13
2N335	TEX	N	Transistor, Low Power, NPN		029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	22140 E(+) B(-)	102	189	13	13
2N336	TEX	N	Transistor, Low Power, NPN		029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	21681 E(+) B(-)	102	189	13	13
2N336A	ETC	N	Transistor, Low Power, NPN		029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	17201 E(+) B(-)	102	189	13	13
2N3375	N/R	N	Transistor, Microwave/RF, Field Effect		232	N/R	N/R	Ohms	100E-12 F	1 N/R	1 FAILED	25313 N/R	102	184	13	13

RAC ESD Database

Part Number	Part	ESD Class	Description	Technology				
					Failure Criteria	Test Remarks	General Remarks	
2N3375	MOT	N	Transistor, Microwave/Rf, Field Effect	Not Applicable				
2N338	TRC	3	Transistor, Low Power, PNP	Not Applicable				
029	N/R	N/R	1500 Ohms 100E-12 F	1 N/R	1 FAILED	6488 E(+) B(-)	102	188 13
2N3421	UNI	2	Transistor, Low Power, NPN	Not Applicable				
392	1186 SS	1500 Ohms 100E-12 F	1 N/R	5 PASSED	2750 C & E TO BASE (+ -)	19	252	13
2N3421	SOL	3	Transistor, Low Power, NPN	Not Applicable				
436	1186 SS	1500 Ohms 100E-12 F	18 N/R	1 PASSED	4000 N/R	5	252	3
2N343	TEX	3	Transistor, Low Power, NPN	Not Applicable				
029	N/R	N/R	1500 Ohms 100E-12 F	1 N/R	1 FAILED	6427 E(+) B(-)	102	189 13
2N3439	N/R	3	Transistor, Low Power, NPN	Not Applicable				
030	N/R	N/R	1500 Ohms 100E-12 F	1 N/R	1 FAILED	10000 N/R	103	252 13
232	N/R	N/R	1500 Ohms 100E-12 F	1 N/R	1 FAILED	12308 N/R	102	184 13
2N3439	MOT	N	Transistor, Low Power, NPN	Not Applicable				
400	1287 SS	1500 Ohms 100E-12 F	171 N/R	10 FAILED	17100 PEV. BIAS E TO B	122	0	10

RAC ESD Database

Part Number	Part ESD		Part		Description		Technology				
	Mfr	Class	Mfr	Class	Description		Technology				
2N3439	MOT	N	Transistor, Low Power, NPN					Not Applicable			
2N3440	RCA		N		Transistor, Low Power, NPN		Not Applicable				
	029	N/R	N/R	100 Ohms	100E-12 F	1 N/R	1 FAILED	30959 E(+) B(-)	102	189	13
	400	1287 SS	1500 Ohms	100E-12 F	390 N/R	10 FAILED	38740 REV. BIAS E TO B	122	0	10	
2N3440	MOT		N		Transistor, Low Power, NPN		Not Applicable				
	232	N/R	N/R	N/R	100E-12 F	1 N/R	1 FAILED	12308 N/R	102	184	13
2N3444	MOT		N		Transistor, Low Power, NPN		Not Applicable				
	400	1287 SS	1500 Ohms	100E-12 F	400 N/R	10 FAILED	40000 REV. BIAS E TO B	122	0	10	
2N3467	MOT		N		Transistor, Low Power, PNP		Not Applicable				
	400	1287 SS	1500 Ohms	100E-12 F	400 N/R	10 FAILED	40000 REV. BIAS E TO B	122	0	10	
2N3468	RAY		N		Transistor, Low Power, PNP		Not Applicable				
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	19178 B(+) E(-)	102	188	13
2N3486A	N/R		3		Transistor, Low Power, PNP		Not Applicable				
	232	N/R	N/R	N/R	100E-12 F	1 N/R	1 FAILED	7189 N/R	102	184	13

RAC ESD Database

Part Number	Part ESD		Part		Description		Technology					
	Mfr	Class	Test	Test	Test	Test	Failure Criteria	Test Remarks	General Remarks			
2N3498	N/R	3	Transistor, Low Power, NPN				Not Applicable					
	Source	Date	Type	Resistance	Capacitance	Pulses	Code	Devices	Test Result	Voltage	Pin Combination	General Remarks
	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	9752 N/R	102 184 13
2N3499	MOT	N	Transistor, Low Power, NPN									Not Applicable
	400	1287	SS	1500	Ohms	100E-12 F	165	N/R	10	FAILED	16500 REV. BIAS E TO B	122 0 10
2N3500	N/R	3	Transistor, Low Power, NPN									Not Applicable
	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	9752 N/R	102 184 13
2N3501	N/R	3	Transistor, Low Power, NPN									Not Applicable
	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	9752 N/R	102 184 13
2N3501	MOT	N	Transistor, Low Power, NPN									Not Applicable
	400	0188	SS	1500	Ohms	100E-12 F	173	N/R	10	PASSED	43000 REV. BIAS E TO B	123 0 10
	436	1186	SS	1500	Ohms	100E-12 F	18	N/R	1	PASSED	4000 N/R	5 252 3
									5	PASSED	4000 N/R	5 252 3
									5	PASSED	4000 N/R	5 252 3
2N3503	N/R	N	Transistor, Low Power, PNP									Not Applicable
	029	N/R	N/R	1500	Ohms	100E-12 F	1	N/R	1	FAILED	16547 B(+) E(-)	102 188 13
2N3507	N/R	N	Transistor, Low Power, NPN									Not Applicable
	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	18753 N/R	102 184 13

RAC ESD Database

Part Number	Part ESD		Part Description	Technology			
	Mfr	Class		Not Applicable			
2N3507	MOT	N	Transistor, Low Power, NPN				
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Number Date	Test Result
	400	1287	SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED
							43000 REV. BIAS E TO B
2N3553	N/R	N	Transistor, Microwave/RF, Bipolar	Not Applicable			
	232	N/R	N/R	Ohms	100E-12 F	1 N/R	1 FAILED
							16516 N/R
2N3553	MOT	N	Transistor, Microwave/RF, Bipolar	Not Applicable			
	400	1287	SS	1500 Ohms	100E-12 F	400 N/R	10 FAILED
							40000 REV. BIAS E TO B
2N3570	N/R	2	Transistor, Low Power, NPN	Not Applicable			
	048	N/R	SS	100 Ohms	218E-12 F	1 N/R	1 FAILED
							380 N/R
2N3584	N/R	N	Transistor, High Power, NPN	Not Applicable			
	232	N/R	N/R	Ohms	100E-12 F	1 N/R	1 FAILED
							34200 N/R
2N3585	MOT	N	Transistor, High Power, NPN	Not Applicable			
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED
							53877 E(+) B(-)
2N3631	N/R	1	Transistor, Field Effect, MOS, N-Channel	Not Applicable			
	028	N/R	SS	1500 Ohms	117E-12 F	30 N/R	5 FAILED
							100 N/R
2N3635	N/R	3	Transistor, Low Power, PNP	Not Applicable			
	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED
							11000 N/R

RAC ESD Database

Part Number	Part	Part ESD		Part Description	Technology										
		Mfr	Class		Not Applicable										
2N3635		N/R	3	Transistor, Low Power, PNP											
		Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	
		Source	Date	Type	Resistance	Capacitance	Pulses	Code	Devices	Pin	Combination	Voltage	Result	General	
		232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	12363 N/R	102	184	
2N3635		MOT	1	Transistor, Low Power, PNP	Not Applicable										
		402	0787	SS	1500 Ohms	100E-12 F	5	N/R	5	FAILED	1100 N/R	68	278	13	
		400	0188	SS	1500 Ohms	100E-12 F	321	N/R	10	PASSED	43000 REV. BIAS E TO B	123	0	10	
		436	1186	SS	1500 Ohms	100E-12 F	18	N/R	5	PASSED	4000 N/R	5	252	3	
2N3636		MOT	N	Transistor, Low Power, PNP	Not Applicable										
		029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	29595 B(+) E(-)	102	189	13	
2N3637		N/R	3	Transistor, Low Power, PNP	Not Applicable										
		232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	12363 N/R	102	184	13
2N3637		MOT	3	Transistor, Low Power, PNP	Not Applicable										
		436	1186	SS	1500 Ohms	100E-12 F	18	N/R	1	PASSED	4000 N/R	5	252	3	
									1	PASSED	4000 N/R	5	252	3	
									1	PASSED	4000 N/R	5	252	3	
									5	PASSED	4000 N/R	5	252	3	
									5	PASSED	4000 N/R	5	252	3	
2N3677		N/R	3	Transistor, Low Power, PNP	Not Applicable										
		029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	6158 B(+) E(-)	102	188	13	

RAC ESD Database

Part Number	Part ESD		Part Description	Technology			
	Mfr Class	FSC	N	Transistor, Low Power, NPN	Not Applicable	Not Applicable	Not Applicable
Test Date	Test Type	Test Resistance	Test Capacitance	Test Voltage	Test Result	Test Voltage Pin Combination	General Remarks
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	16661 E(+) B(102 188 13
2N3700	MOT	3	Transistor, Low Power, NPN				Not Applicable
400	1287 SS	1500 Ohms	100E-12 F	102 N/R	10 FAILED	10200 REV. BIAS E TO B	122 0 10
2N3715	N/R	N	Transistor, High Power, NPN				Not Applicable
232	N/R	N/R	Ohms	100E-12 F	1 N/R	75917 N/R	102 184 13
2N3715	MOT	N	Transistor, High Power, NPN				Not Applicable
400	1287 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED	43000 REV. BIAS E TO B	122 0 10
2N3716	N/R	N	Transistor, High Power, NPN				Not Applicable
232	N/R	N/R	Ohms	100E-12 F	1 N/R	75917 N/R	102 184 13
2N3716	MOT	N	Transistor, High Power, NPN				Not Applicable
400	1287 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED	43000 REV. BIAS E TO B	122 0 10
2N3724	MOT	3	Transistor, Low Power, NPN				Not Applicable
400	1287 SS	1500 Ohms	100E-12 F	102 N/R	10 FAILED	10200 REV. BIAS E TO B	122 0 10
2N3735	N/R	3	Transistor, Low Power, NPN				Not Applicable
232	N/R	N/R	Ohms	100E-12 F	1 N/R	9999 N/R	102 184 13

RAC ESD Database

Part Number	Part ESD		Part Description	Technology			
	Mfr	Class		Not Applicable			
2N3735	MOT	N	Transistor, Low Power, NPN				
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Number Date	Test Voltage
	400	1287	SS	1500 Ohms	100E-12 F	350 N/R	34990 REV. BIAS E TO B
						10 FAILED	
							122 0 10
2N3737	N/R	3	Transistor, Low Power, NPN				Not Applicable
	232	N/R	N/R	N/R	Ohms	100E-12 F	1 N/R
						1 FAILED	8451 N/R
							102 184 13
2N3737	MOT	N	Transistor, Low Power, NPN				Not Applicable
	400	1287	SS	1500 Ohms	100E-12 F	320 N/R	31790 REV. BIAS E TO B
						10 FAILED	
							122 0 10
2N3739	N/R	N	Transistor, High Power, NPN				Not Applicable
	232	N/R	N/R	N/R	Ohms	100E-12 F	1 N/R
						1 FAILED	27363 N/R
							102 184 13
2N3739	MOT	N	Transistor, High Power, NPN				Not Applicable
	400	1287	SS	1500 Ohms	100E-12 F	390 N/R	39000 REV. BIAS E TO B
						10 FAILED	
							122 0 10
2N3741	N/R	N	Transistor, High Power, PNP				Not Applicable
	232	N/R	N/R	N/R	Ohms	100E-12 F	1 N/R
						1 FAILED	28191 N/R
							102 184 13
2N3741	MOT	N	Transistor, High Power, PNP				Not Applicable
	400	0188	SS	1500 Ohms	100E-12 F	400 N/R	43000 REV. BIAS E TO B
						10 PASSED	
							123 0 10
	436	1186	SS	1500 Ohms	100E-12 F	18 N/R	4000 N/R
						2 PASSED	
							5 252 3

RAC ESD Database

Part Number	Part	Part ESD		Description	Test												Technology		
		Mfr	Class		Test Date	Test Type	Resistance	Capacitance	Pulses	Date	Number	Devices	Code	Test Result	Voltage	Pin Combination	Failure Criteria	Test Remarks	General Remarks
2N3741	MOT	N	Transistor, High Power, PNP	436	1186	SS	1500 Ohms	100E-12 F	18	N/R	5	PASSED	4000	N/R	5	252	3		
2N3741	SOL	3	Transistor, High Power, PNP	436	1186	SS	1500 Ohms	100E-12 F	18	N/R	1	PASSED	4000	N/R	5	252	3		
2N3743	MOT	N	Transistor, Low Power, PNP	400	0188	SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	REV. BIAS E TO B	123	0	10		
2N3743	MOT	N	Transistor, Low Power, PNP	436	1186	SS	1500 Ohms	100E-12 F	18	N/R	1	PASSED	4000	N/R	5	252	3		
2N375	MOT	N	Transistor, High Power, NPN	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	28201	B(+) C(-)	102	189	13		
2N3763	N/R	3	Transistor, Low Power, PNP	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	9999	N/R	102	184	13	
2N3763	VAR	3	Transistor, Low Power, PNP	402	0887	SS	1500 Ohms	100E-12 F	5	N/R	2	FAILED	10000	N/R	68	252	13		
2N3765	N/R	3	Transistor, Low Power, PNP	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	9999	N/R	102	184	13	

RAC ESD Database

Part Number	Part ESD		Part Description	Technology			
	Mfr	Class		Not Applicable			
2N3767	MOT	N	Transistor, High Power, NPN				
	Test Source	Test Date	Test Resistance	Test Capacitance	Test Pulses	Test Number	Test Voltage
	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10	43000 REV. BIAS E TO B
						10	PASSED
							123
							0
							10
2N3772	N/R	N	Transistor, High Power, NPN	Not Applicable			
232	N/R	N/R	N/R Ohms	100E-12 F	1 N/R	1	76645 N/R
						1	FAILED
							102
							184
							13
2N3791	N/R	N	Transistor, High Power, PNP	Not Applicable			
232	N/R	N/R	N/R Ohms	100E-12 F	1 N/R	1	76500 N/R
						1	FAILED
							102
							184
							13
2N3791	MOT	N	Transistor, High Power, PNP	Not Applicable			
400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10	PASSED	43000 REV. BIAS E TO B
						10	PASSED
							123
							0
							10
2N3792	MOT	N	Transistor, High Power, PNP	Not Applicable			
400	1287 SS	1500 Ohms	100E-12 F	400 N/R	10	PASSED	43000 REV. BIAS E TO B
436	1186 SS	1500 Ohms	100E-12 F	18 N/R	3	PASSED	4000 N/R
						3	PASSED
							5
							252
							3
2N3799	N/R	3	Transistor, Low Power, PNP	Not Applicable			
030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1	7000 N/R
						1	FAILED
							103
							252
							13
2N3810	N/R	3	Transistor, Multiple, Differ. Amplifier	Not Applicable			
232	N/R	N/R	N/R Ohms	100E-12 F	1 N/R	1	5048 N/R
						1	FAILED
							102
							184
							13

RAC ESD Database

Part Number	Part ESD		Part Description	Technology			
	Mfr	Class		Not Applicable			
2N3810	MOT	3	Transistor, Multiple, Differ. Amplifier				
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses	Test Number
	400	0188	SS	1500 Ohms	100E-12 F	64 N/R	10 FAILED
							6350 REV. BIAS E TO B
2N3811	N/R	3	Transistor, Multiple, Differ. Amplifier				
	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED
							6000 N/R
2N3811	MOT	3	Transistor, Multiple, Differ. Amplifier				
	400	0188	SS	1500 Ohms	100E-12 F	73 N/R	10 FAILED
							7720 REV. BIAS E TO B
2N3821	N/R	3	Transistor, Field Effect, MOS, N-Channel				
	232	N/R	N/R	N/R	Ohms	100E-12 F	1 N/R
							4879 N/R
2N3821	MOT	2	Transistor, Field Effect, MOS, N-Channel				
	400	1287	SS	1500 Ohms	100E-12 F	29 N/R	10 FAILED
							2900 REV. BIAS E TO B
2N3822	N/R	3	Transistor, Field Effect, MOS, N-Channel				
	232	N/R	N/R	N/R	Ohms	100E-12 F	1 N/R
							7879 N/R
2N3822	MOT	2	Transistor, Field Effect, MOS, N-Channel				
	400	1287	SS	1500 Ohms	100E-12 F	35 N/R	10 FAILED
							3500 REV. BIAS E TO B
2N3823	N/R	3	Transistor, Field Effect, MOS, N-Channel				
	232	N/R	N/R	N/R	Ohms	100E-12 F	1 N/R
							4045 N/R

RAC ESD Database

Part Number	Part ESD	Part Description	Technology	
			Failure Test Criteria	General Remarks
2N3823	TEX	1 Transistor, Field Effect, MOS, N-Channel	Not Applicable	13
2N3823	MOT	1 Transistor, Field Effect, MOS, N-Channel	Not Applicable	13
400	1287 SS	1500 Ohms 100E-12 F	1000 REV. BIAS E TO B	10
2N3866	RCA	N Transistor, Microwave/RF, Bipolar	Not Applicable	13
026	0178 SS	100 Ohms 200E-12 F	3525 E(+) B(-)	13
2N3866	MOT	3 Transistor, Microwave/RF, Bipolar	Not Applicable	13
400	1287 SS	1500 Ohms 100E-12 F	10500 REV. BIAS E TO B	10
2N3866	N/R	3 Transistor, Microwave/RF, Bipolar	Not Applicable	13
232	N/R	N/R Ohms 100E-12 F	11659 N/R	13
2N3866A	N/R	3 Transistor, Microwave/RF, Bipolar	Not Applicable	13
232	N/R	N/R Ohms 100E-12 F	11659 N/R	13
2N3868	N/R	N Transistor, Low Power, PNP	Not Applicable	13
232	N/R	N/R Ohms 100E-12 F	22533 N/R	13
2N3868	MOT	N Transistor, Low Power, PNP	Not Applicable	13
400	1287 SS	1500 Ohms 100E-12 F	41700 REV. BIAS E TO B	10

RAC ESD Database

Part Number	Part	Part ESD										Technology			
		Mfr Class	Description			Test Type	Test Resistance	Capacitance	Pulses	Date Code	Number Devices	Test Result	Voltage Pin Combination	Failure Criteria	Test Remarks
2N389	N	TEX	N	Transistor, High Power, NPN	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	43161 E(+)	B(-)	102	189	13
2N3902	N/R	3	Transistor, High Power, NPN	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 PASSED	15300 N/R			103	252	13
2N3906	MOT	1	Transistor, High Power, PNP	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	5 FAILED	1500 C-B (+ -)			19	150	13
400	0188 SS	1500 Ohms	100E-12 F	96 N/R	10 FAILED	9600 REV. BIAS E TO B							123	0	10
2N3959	MOT	1	Transistor, Low Power, NPN	N/R	N/R	1500 Ohms	100E-12 F	11 N/R	10 FAILED	1100 REV. BIAS E TO B			122	0	10
2N3960	N/R	2	Transistor, Low Power, NPN	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	3921 N/R			102	184	13
2N3964	N/R	3	Transistor, Low Power, PNP	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	5500 N/R			103	252	13
2N3971	N/R	1	Transistor, Field Effect, Junction, N-Channel	N/R	N/R	100 Ohms	218E-12 F	1 N/R	1 FAILED	160 N/R			16	252	23

RAC ESD Database

Part Number	Part ESD		Part		Technology										
	Mfr	Class	Description		Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
2N3997	N/R	3	Transistor, High Power, NPN												
	Test	Test	Test	Number	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test
	Source	Date	Type	Resistance	Capacitance	Pulses	Code	Devices	Voltage	Pin	Combination	Failure	Test	General	Remarks
232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	4538	N/R	102	184	13	
2N4029	VAR	3	Transistor, Low Power, PNP									Not Applicable			
402	0887	SS	1500 Ohms	100E-12 F	5	N/R	2	FAILED	10000	N/R		68	252	13	
2N4033	N/R	N	Transistor, Low Power, PNP									Not Applicable			
029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	16190	B(+)	E(-)	102	188	13	
2N4033	MOT	N	Transistor, Low Power, PNP									Not Applicable			
400	1287	SS	1500 Ohms	100E-12 F	400	N/R	10	FAILED	40000	REV.	BIAS E TO B	122	0	10	
2N4036	N/R	3	Transistor, High Power, PNP									Not Applicable			
030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	5000	N/R		103	252	13	
2N4091	SIX	1	Transistor, Field Effect, MOS, N-Channel									Not Applicable			
392	1186	SS	1500 Ohms	100E-12 F	1	N/R	5	FAILED	850	D & S	TO GATE (+ -)	19	252	13	
2N4118A	N/R	1	Transistor, Field Effect, Junction, N-Channel									Not Applicable			
048	N/R	SS	100 Ohms	218E-12 F	1	N/R	1	FAILED	140	N/R		16	252	23	
2N4134	N/R	1	Transistor, Low Power, NPN									Not Applicable			
030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	2000	N/R		103	252	13	

RAC ESD Database

Part Number	Part ESD		Part Description	Test										Technology							
	Mfr	Class		Test	Type	Resistance	Capacitance	Test	Number	Date	Pulses	Code	Devices	Test	Result	Voltage	Pin	Combination	Failure Criteria	Test Remarks	General Remarks
2N4150	N/R	2	Transistor, Low Power, PNP	232	N/R	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	2951	N/R				102	184	13
2N4209	MOT	1	Transistor, Low Power, PNP	400	1287	SS	1500	Ohms	100E-12 F	17	N/R	10	FAILED	1700	REV. BIAS E TO B				122	0	10
2N4236	MOT	N	Transistor, Low Power, PNP	400	0188	SS	1500	Ohms	100E-12 F	400	N/R	10	PASSED	43000	REV. BIAS E TO B				123	0	10
2N4251	N/R	2	Transistor, Low Power, NPN	048	N/R	SS	100	Ohms	218E-12 F	1	N/R	1	FAILED	460	N/R				15	252	23
2N4261	MOT	1	Transistor, Low Power, PNP	400	1287	SS	1500	Ohms	100E-12 F	15	N/R	10	FAILED	1500	REV. BIAS E TO B				122	0	10
2N4303	N/R	2	Transistor, Field Effect, Junction, N-Channel	014	N/R	SS	100	Ohms	100E-12 F	1	N/R	1	FAILED	850	SOURCE DRAIN				102	74	13
				015	N/R	SS	1000	Ohms	100E-12 F	1	N/R	1	FAILED	10000	SOURCE DRAIN				102	10	13
				016	N/R	SS	10K	Ohms	100E-12 F	1	N/R	1	FAILED	16300	SOURCE DRAIN				102	21	13
2N4351	MOT	1	Transistor, Field Effect, MOS, N-Channel	393	0385	SS	1500	Ohms	100E-12 F	1	N/R	2	FAILED	150	GATE(+) DRAIN(-)				102	252	13

RAC ESD Database

Part Number	Part ESD		Part		Technology	
	Mfr	Class	Description	Not Applicable	Not Applicable	Not Applicable
2N4392	SIX	1	Transistor, Field Effect, Junction, N-Channel			
	Test	Test	Test	Test	Test	Test
	Source	Date	Type	Resistance	Capacitance	Pulses
	402	0887	SS	1500 Ohms	100E-12 F	5 N/R
						6 FAILED
						1000 N/R
						68 283 13
2N4392	MSC	2	Transistor, Field Effect, Junction, N-Channel			
	402	0887	SS	1500 Ohms	100E-12 F	5 N/R
						5 FAILED
						2500 N/R
						68 282 13
2N4393	SOL	3	Transistor, Field Effect, Junction, N-Channel			
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
						1 FAILED
						5691 DRAIN SOURCE
						102 188 13
2N4399	N/R	N	Transistor, High Power, PNP			
	232	N/R	N/R	N/R	Ohms	100E-12 F
						1 N/R
						1 FAILED
						88158 N/R
						102 184 13
2N4399	MOT	N	Transistor, High Power, PNP			
	400	0188	SS	1500 Ohms	100E-12 F	400 N/R
						10 PASSED
						43000 REV. BIAS E TO B
						123 0 10
2N4405	N/R	3	Transistor, Low Power, PNP			
	232	N/R	N/R	N/R	Ohms	100E-12 F
						1 N/R
						1 FAILED
						12362 N/R
						102 184 13
2N4405	MOT	N	Transistor, Low Power, PNP			
	400	1287	SS	1500 Ohms	100E-12 F	400 N/R
						10 FAILED
						40000 REV. BIAS E TO B
						122 0 10
2N4407	MOT	2	Transistor, Low Power, PNP			
	402	0887	SS	1500 Ohms	100E-12 F	5 N/R
						4 FAILED
						2500 N/R
						68 278 13

RAC ESD Database

Part Number	Part ESD		Part		Description		Technology	
	Mfr	Class	Test	Test	Test	Test	Failure Criteria	Test Remarks
2N4416	ISL	1	Transistor, Field Effect, MOS, N-Channel	100E-12 F	200 N/R	100 G(+) S(-)	71	252
249	N/R	GN	1500 Ohms	100E-12 F	200 N/R	1 FAILED	100 G(+) S(-)	13
253	N/R	GN	1500 Ohms	100E-12 F	200 N/R	1 PASSED	130 G(+) S(-)	13
254	N/R	GN	1500 Ohms	100E-12 F	200 N/R	1 FAILED	140 G(+) S(-)	113
256	N/R	GN	1500 Ohms	100E-12 F	18 N/R	1 FAILED	150 G(+) S(-)	13
259	N/R	GN	1500 Ohms	100E-12 F	20 N/R	1 FAILED	165 G(+) S(-)	13
262	N/R	GN	1500 Ohms	100E-12 F	10 N/R	1 FAILED	175 G(+) S(-)	13
263	N/R	GN	1500 Ohms	100E-12 F	4 N/R	1 FAILED	180 G(+) S(-)	13
263	N/R	GN	1500 Ohms	100E-12 F	500 N/R	2 PASSED 1 PASSED	180 G(+) S(-) 180 G(+) S(-)	13 13
263	N/R	GN	1500 Ohms	100E-12 F	1 N/R	1 FAILED	180 G(+) S(-)	13
264	N/R	GN	1500 Ohms	100E-12 F	45 N/R	1 FAILED	185 G(+) S(-)	13
264	N/R	GN	1500 Ohms	100E-12 F	200 N/R	1 PASSED 1 FAILED	185 G(+) S(-) 185 G(+) S(-)	13 113
265	N/R	GN	1500 Ohms	100E-12 F	6 N/R	1 FAILED	190 G(+) S(-)	13
266	N/R	GN	1500 Ohms	100E-12 F	1 N/R	1 FAILED 4 PASSED 1 FAILED	192 G(+) S(-) 192 G(+) S(-) 192 G(+) S(-)	13 13 13
267	N/R	GN	1500 Ohms	100E-12 F	500 N/R	1 FAILED	195 G(+) S(-)	13
267	N/R	GN	1500 Ohms	100E-12 F	1 N/R	1 FAILED	195 G(+) S(-)	13

RAC ESD Database

Part Number (Cont'd)	Part ESD		Part Description	Technology														
	Mfr	Class		Not Applicable								General Remarks						
2N4416	ISL	1	Transistor, Field Effect, MOS, N-Channel	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Number Pulses	Date Code	Test Number	Test Result	Test Voltage	Test Pin	Test Combination	Failure Criteria	Test Remarks	General Remarks
				267	N/R	GN	1500 Ohms	100E-12 F	500	N/R	2	FAILED	195 G(+)	S(-)		113	252	13
				267	N/R	GN	1500 Ohms	100E-12 F	15	N/R	1	FAILED	195 G(+)	S(-)		69	252	13
				268	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	200 G(+)	S(-)		69	252	13
				268	N/R	GN	1500 Ohms	100E-12 F	4	N/R	1	FAILED	200 G(+)	S(-)		69	252	13
				269	N/R	GN	1500 Ohms	100E-12 F	200	N/R	1	FAILED	205 G(+)	S(-)		113	252	13
				270	N/R	GN	1500 Ohms	100E-12 F	1	N/R	1	FAILED	210 G(+)	S(-)		69	252	13
				270	N/R	GN	1500 Ohms	100E-12 F	30	N/R	1	FAILED	210 G(+)	S(-)		69	252	13
				270	N/R	GN	1500 Ohms	100E-12 F	9	N/R	1	FAILED	210 G(+)	S(-)		69	252	13
				270	N/R	GN	1500 Ohms	100E-12 F	1	N/R	1	FAILED	210 G(+)	S(-)		69	252	13
				270	N/R	GN	1500 Ohms	100E-12 F	200	N/R	1	PASSED	210 G(+)	S(-)		69	252	13
				270	N/R	GN	1500 Ohms	100E-12 F	25	N/R	1	FAILED	210 G(+)	S(-)		71	252	13
				272	N/R	GN	1500 Ohms	100E-12 F	1	N/R	1	FAILED	216 G(+)	S(-)		69	252	13
											5	PASSED	216 G(+)	S(-)		69	252	13
				273	N/R	GN	1500 Ohms	100E-12 F	200	N/R	1	PASSED	220 G(+)	S(-)		69	252	13
				274	N/R	GN	1500 Ohms	100E-12 F	200	N/R	1	PASSED	225 G(+)	S(-)		69	252	13
				274	N/R	GN	1500 Ohms	100E-12 F	1	N/R	1	FAILED	225 G(+)	S(-)		69	252	13
				274	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	225 G(+)	S(-)		69	252	13
											1	FAILED	225 G(+)	S(-)		113	252	13

RAC ESD Database

Part Number (Cont'd)	Part ESD		Part		Description										Technology			
	Mfr	Class	Test Date	Test Type	Test Resistance	Test Capacitance	Number Pulses	Date Code	Devices	Test Result	Test Voltage	Pin Combination	Failure Criteria	Test Remarks	General Remarks			
2N4416	ISL	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test			
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination		Criteria	Remarks
			275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	2	PASSED	230	G(+)	S(-)	69		252	13
			276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240	G(+)	S(-)	69		252	13
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel													Not Applicable		
			Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test		Test	
			Source	Date	Type	Resistance	Capacitance	Pulses	Date									

RAC ESD Database

Part Number 2N4416	Part ESD		Part Description	Technology									
	Mfr	Class		Not Applicable									
TEX 1 Transistor, Field Effect, MOS, N-Channel													
Test	Test Date	Test Type	Resistance	Test Capacitance	Number Pulses	Date	Number Devices	Code	Test Result	Test Voltage	Pin Combination	Failure Criteria	General Remarks
267	N/R	GN	1500 Ohms	100E-12 F	500	N/R	2	PASSED	195 G(+)	S(-)	69	252	13
268	N/R	GN	1500 Ohms	100E-12 F	3	N/R	1	FAILED	200 G(+)	S(-)	69	252	13
270	N/R	GN	1500 Ohms	100E-12 F	200	N/R	1	PASSED	210 G(+)	S(-)	69	252	13
270	N/R	GN	1500 Ohms	100E-12 F	1	N/R	1	FAILED	210 G(+)	S(-)	69	252	13
270	N/R	GN	1500 Ohms	100E-12 F	3	N/R	1	FAILED	210 G(+)	S(-)	69	252	13
270	N/R	GN	1500 Ohms	100E-12 F	90	N/R	1	FAILED	210 G(+)	S(-)	71	252	13
270	N/R	GN	1500 Ohms	100E-12 F	15	N/R	1	FAILED	210 G(+)	S(-)	69	252	13
270	N/R	GN	1500 Ohms	100E-12 F	9	N/R	1	FAILED	210 G(+)	S(-)	69	252	13
271	N/R	GN	1500 Ohms	100E-12 F	200	N/R	1	FAILED	215 G(+)	S(-)	69	252	13
272	N/R	GN	1500 Ohms	100E-12 F	1	N/R	4	PASSED	216 G(+)	S(-)	69	252	13
274	N/R	GN	1500 Ohms	100E-12 F	2	N/R	1	FAILED	225 G(+)	S(-)	69	252	13
274	N/R	GN	1500 Ohms	100E-12 F	20	N/R	1	FAILED	225 G(+)	S(-)	69	252	13
274	N/R	GN	1500 Ohms	100E-12 F	4	N/R	1	FAILED	225 G(+)	S(-)	69	252	13
274	N/R	GN	1500 Ohms	100E-12 F	200	N/R	1	FAILED	225 G(+)	S(-)	113	252	13
275	N/R	GN	1500 Ohms	100E-12 F	2	N/R	1	FAILED	230 G(+)	S(-)	69	252	13
275	N/R	GN	1500 Ohms	100E-12 F	200	N/R	1	FAILED	230 G(+)	S(-)	69	252	13
276	N/R	GN	1500 Ohms	100E-12 F	1	N/R	2	FAILED	240 G(+)	S(-)	69	252	13

RAC ESD Database

Part Number	Part ESD		Part Description		Technology	
	Mfr	Class	Test	Test	Not Applicable	Not Applicable
2N4416	TEX	1	Transistor, Field Effect, MOS, N-Channel			
	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses	Test Number
	276	N/R	GN	1500 Ohms	100E-12 F	25 N/R
					100E-12 F	1 FAILED
					240 G(+)	S(-)
	276	N/R	GN	1500 Ohms	100E-12 F	35 N/R
					100E-12 F	1 FAILED
					240 G(+)	S(-)
	276	N/R	GN	1500 Ohms	100E-12 F	90 N/R
					100E-12 F	1 FAILED
					240 G(+)	S(-)
2N4416	SIX	2	Transistor, Field Effect, MOS, N-Channel			
	402	0887	SS	1500 Ohms	100E-12 F	5 N/R
					100E-12 F	2 FAILED
					3700 N/R	
2N4416	NSC	1	Transistor, Field Effect, MOS, N-Channel			
	402	0887	SS	1500 Ohms	100E-12 F	5 N/R
					100E-12 F	2 FAILED
					1400 N/R	
2N4416A	N/R	2	Transistor, Field Effect, MOS, N-Channel			
	232	N/R	N/R	N/R	Ohms	100E-12 F
					100E-12 F	1 N/R
					3259 N/R	
2N4416A	MOT	1	Transistor, Field Effect, MOS, N-Channel			
	400	1287	SS	1500 Ohms	100E-12 F	9 N/R
					100E-12 F	10 FAILED
					900 REV. BIAS	E TO B
2N463	KSC	N	Transistor, High Power, NPN			
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
					100E-12 F	1 FAILED
					68798 B(+)	E(-)
2N4856	N/R	3	Transistor, Field Effect, MOS, N-Channel			
	232	N/R	N/R	N/R	Ohms	100E-12 F
					100E-12 F	1 N/R
					8395 N/R	

Failure Test	General
Criteria	Remarks
71	252
71	252
69	252
Not Applicable	
68	281
Not Applicable	
68	281
Not Applicable	
102	184
Not Applicable	
122	0
Not Applicable	
102	189
Not Applicable	
102	184

RAC ESD Database

Part Number	Part ESD		Part Description	Technology										
	Mfr	Class		Test	Test Test	Test	Number	Date	Code	Devices	Pin Combination	Failure Criteria	Test Remarks	General Remarks
2N4856	MOT	1	Transistor, Field Effect, MOS, N-Channel	Source Date	Resistance	Capacitance	Pulses							
	436	0588 SS	1500 Ohms	100E-12 F	12	N/R	2	FAILED	1500	SOURCE TO GATE	5	252	3	
2N4856	400	1287 SS	1500 Ohms	100E-12 F	11	N/R	10	FAILED	1100	REV. BIAS E TO B	122	0	10	
	SOL	2	Transistor, Field Effect, MOS, N-Channel	Not Applicable										
2N4856	436	0688 SS	1500 Ohms	100E-12 F	15	N/R	4	FAILED	2500	+ GATE TO - SOURCE	5	252	3	
	SIX	1	Transistor, Field Effect, MOS, N-Channel	Not Applicable										
2N4857	436	1186 SS	1500 Ohms	100E-12 F	9	N/R	1	FAILED	1000	GATE TO SOURCE	5	252	3	
	SIX	1	Transistor, Field Effect, MOS, N-Channel	Not Applicable										
2N4857	402	0887 SS	1500 Ohms	100E-12 F	5	N/R	8	FAILED	1500	N/R	68	277	13	
	ISL	1	Transistor, Field Effect, MOS, N-Channel	Not Applicable										
2N4857	436	0788 SS	1500 Ohms	100E-12 F	12	N/R	5	FAILED	1500	- GATE TO + SOURCE	5	252	3	
	436	1186 SS	1500 Ohms	100E-12 F	18	N/R	5	PASSED	4000	N/R	5	252	3	
2N4857	MOT	1	Transistor, Field Effect, MOS, N-Channel	Not Applicable										
	436	1186 SS	1500 Ohms	100E-12 F	5	N/R	5	FAILED	600	SOURCE TO GATE	5	252	3	
2N4857	436	1186 SS	1500 Ohms	100E-12 F	12	N/R	5	FAILED	1500	SOURCE TO GATE	5	252	3	
	N/R	3	Transistor, Field Effect, MOS, N-Channel	Not Applicable										
2N4858	N/R	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	6000	N/R	103	252	13

RAC ESD Database

Part Number (Cont'd)	Part ESD		Part Description	Transistor, Field Effect, MOS, N-Channel													Technology		
	Mfr	Class		Test Date	Test Type	Resistance	Capacitance	Pulses	Number	Date	Code	Devices	Test Result	Voltage	Pin	Combination	Failure Criteria	Test Remarks	General Remarks
2N4858	N/R	3	Transistor, Field Effect, MOS, N-Channel	232	N/R	N/R	N/R	Ohms	100E-12	F	1	N/R	1	FAILED	8395	N/R	102	184	13
2N4858	MOT	3	Transistor, Field Effect, MOS, N-Channel	400	1287	SS	1500	Ohms	100E-12	F	41	N/R	10	FAILED	4100	REV. BIAS E TO B	122	0	10
	ISL	1	Transistor, Field Effect, MOS, N-Channel	436	1186	SS	1500	Ohms	100E-12	F	18	N/R	1	PASSED	4000	N/R	5	252	3
													5	PASSED	4000	N/R	5	252	3
2N4858				436	1186	SS	1500	Ohms	100E-12	F	3	N/R	3	FAILED	400	SOURCE TO GATE	5	252	3
													5	FAILED	400	SOURCE TO GATE	5	252	3
2N4858	SIX	1	Transistor, Field Effect, MOS, N-Channel														Not Applicable		
2N4858				436	1186	SS	1500	Ohms	100E-12	F	7	N/R	2	FAILED	800	SOURCE TO GATE	5	252	3
				436	1186	SS	1500	Ohms	100E-12	F	12	N/R	2	FAILED	1600	SOURCE TO GATE	5	252	3
				436	1186	SS	1500	Ohms	100E-12	F	11	N/R	2	FAILED	1400	SOURCE TO GATE	5	252	3
2N4872	N/R	3	Transistor, Low Power, PNP														Not Applicable		
2N4872				048	N/R	SS	100	Ohms	218E-12	F	1	N/R	1	FAILED	1200	N/R	15	252	23
	GE	N	Transistor, Unijunction														Not Applicable		
2N491				029	N/R	N/R	1500	Ohms	100E-12	F	1	N/R	1	FAILED	83934	E(+) B(-)	102	188	13

RAC ESD Database

Part Number	Part ESD		Part Description	Technology			
	Mfr	Class		Not Applicable			
2N4931	N/R	3	Transistor, Low Power, PNP				
	Test	Test	Test	Test	Test	Test	General
	Date	Type	Resistance	Capacitance	Pulses	Code	Remarks
232	N/R	N/R	N/R	Ohms	100E-12 F	1 N/R	102 184 13
	Source	Device	Pin	Combination	Voltage	Test	Remarks
	232	N/R	1	FAILED	12387 N/R		
2N4948	MOT	N	Transistor, Unijunction	Not Applicable			
026	0281	SS	100 Ohms	200E-12 F	1 N/R	4 FAILED	24 285 13
400	1287	SS	1500 Ohms	100E-12 F	179 N/R	10 FAILED	122 0 10
2N4949	MOT	N	Transistor, Unijunction	Not Applicable			
400	1287	SS	1500 Ohms	100E-12 F	175 N/R	10 FAILED	122 0 10
2N4957	N/R	1	Transistor, Low Power, PNP	Not Applicable			
232	N/R	N/R	N/R	Ohms	100E-12 F	1 N/R	102 184 13
2N4957	MOT	1	Transistor, Low Power, PNP	Not Applicable			
400	1287	SS	1500 Ohms	100E-12 F	12 N/R	10 FAILED	122 0 10
2N4959	MOT	1	Transistor, Low Power, PNP	Not Applicable			
392	1186	SS	1500 Ohms	100E-12 F	1 N/R	5 FAILED	19 252 13
2N495A	CSI	1	Transistor, Low Power, PNP	Not Applicable			
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	102 189 13

RAC ESD Database

Part Number	Part ESD		Part Description	Technology			
	Mfr	Class		Test	Test	Test	Not Applicable
2N498	TEX	N	Transistor, Low Power, PNP				
	Test Source	Test Date	Test Type	Resistance	Capacitance	Number Date	Test
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED 26297 B(+) E(-)
							102 189 13
2N5019	SIX	3	Transistor, Field Effect, Junction, P-Channel				Not Applicable
	402	0887 SS	1500 Ohms	100E-12 F	5 N/R	5 FAILED	68 252 13
2N5036	N/R	3	Transistor, Low Power, NPN				Not Applicable
	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED 15000 N/R
							103 252 13
2N5038	N/R	N	Transistor, High Power, NPN				Not Applicable
	232	N/R	N/R	N/R	Ohms	100E-12 F	1 FAILED 20283 N/R
							102 184 13
2N5038	MOT	N	Transistor, High Power, NPN				Not Applicable
	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED	43000 REV. BIAS E TO B
							123 0 10
2N5038	RCA	3	Transistor, High Power, NPN				Not Applicable
	436	1186 SS	1500 Ohms	100E-12 F	18 N/R	2 PASSED	4000 N/R
						5 PASSED	4000 N/R
						5 PASSED	4000 N/R
						5 PASSED	4000 N/R
						2 PASSED	4000 N/R
						2 PASSED	4000 N/R
						3 PASSED	4000 N/R
						2 PASSED	4000 N/R
							5 252 3
							5 252 3
							5 252 3
							5 252 3
							5 252 3
							5 252 3
							5 252 3
							5 252 3

RAC ESD Database

Part Number	ESD Part	Description										Technology			
		Mfr	Class	Test	Resistance	Capacitance	Pulses	Code	Devices	Number	Test	Failure Criteria	Test Remarks	General Remarks	
2N5038	RCA	3	Transistor, High Power, NPN											Not Applicable	
2N5109	N/R	3	Transistor, Microwave/RF, Bipolar											Not Applicable	
	232	N/R	N/R	Ohms	100E-12 F	1	N/R	1	FAILED	9246	N/R	102	184	13	
	400	1287	SS	1500	Ohms	100E-12 F	400	N/R	10	FAILED	40000 REV. BIAS E TO B	122	0	10	
2N5114	N/R	3	Transistor, Field Effect, Junction, P-Channel											Not Applicable	
	030	N/R	N/R	1500	Ohms	100E-12 F	1	N/R	1	FAILED	7000	N/R	103	252	13
		ISL	2	Transistor, Field Effect, Junction, P-Channel											Not Applicable
2N5114	436	1186	SS	1500	Ohms	100E-12 F	18	N/R	5	PASSED	4000	N/R	5	252	3
	436	1186	SS	1500	Ohms	100E-12 F	17	N/R	5	FAILED	3500	GATE TO SOURCE	5	252	3
	436	1186	SS	1500	Ohms	100E-12 F	15	N/R	1	FAILED	2500	GATE TO SOURCE	5	252	3
2N5116	ISL	1	Transistor, Field Effect, Junction, P-Channel												Not Applicable
	436	1186	SS	1500	Ohms	100E-12 F	18	N/R	5	PASSED	4000	N/R	5	252	3
	436	1186	SS	1500	Ohms	100E-12 F	15	N/R	1	FAILED	2500	SOURCE TO GATE	5	252	3

RAC ESD Database

Part Number	Part ESD		Part Description	Technology									
	Mfr	Class		Test Date	Test Type	Test Resistance	Test Capacitance	Number Pulses	Date Code	Number Devices	Test Result	Test Voltage	Pin Combination
2N5116	ISL	1	Transistor, Field Effect, Junction, P-Channel	436	1186 SS	1500 Ohms	100E-12 F	12	N/R	1	FAILED	1600	GATE TO SOURCE
				436	1186 SS	1500 Ohms	100E-12 F	14	N/R	5	FAILED	2000	GATE TO SOURCE
				436	1186 SS	1500 Ohms	100E-12 F	9	N/R	1	FAILED	1000	GATE TO SOURCE
				436	1186 SS	1500 Ohms	100E-12 F	3	N/R	1	FAILED	400	GATE TO SOURCE
2N5154	N/R	N	Transistor, Low Power, NPN	048	N/R SS	100 Ohms	218E-12 F	1	N/R	1	PASSED	3000	N/R
2N5157	N/R	N	Transistor, High Power, NPN	232	N/R N/R	N/R Ohms	100E-12 F	1	N/R	1	FAILED	96560	N/R
2N5196	SIX	1	Transistor, Field Effect, Junction, N-Channel	402	SS	1500 Ohms	100E-12 F	5	N/R	5	FAILED	700	N/R
2N5241	N/R	3	Transistor, High Power, NPN	232	N/R N/R	N/R Ohms	100E-12 F	1	N/R	1	FAILED	7439	N/R
2N5245	N/R	2	Transistor, Field Effect, Junction, N-Channel	014	N/R SS	100 Ohms	100E-12 F	1	N/R	1	FAILED	600	GATE DRAIN
				015	N/R SS	1000 Ohms	100E-12 F	1	N/R	1	FAILED	3200	GATE DRAIN

RAC ESD Database

Part Number	Part ESD		Part Description	Technology			
	Mfr	Class		Not Applicable			
2N5245	N/R	2	Transistor, Field Effect, Junction, N-Channel				
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses	Test Number
	016	N/R	SS	10K Ohms	100E-12 F	1 N/R	1
							1 FAILED
							5500 GATE DRAIN
							13
2N526	GE	N	Transistor, Low Power, PNP	Not Applicable			
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1	1 FAILED
							17903 B(+) E(-)
							13
2N526	MOT	N	Transistor, Low Power, PNP	Not Applicable			
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1	1 FAILED
							30560 E(+) E(-)
							13
2N5302	N/R	N	Transistor, High Power, NPN	Not Applicable			
232	N/R	N/R	N/R Ohms	100E-12 F	1 N/R	1	1 FAILED
							88158 N/R
							13
2N5302	MOT	N	Transistor, High Power, NPN	Not Applicable			
400	0188	SS	1500 Ohms	100E-12 F	400 N/R	10	PASSED
							43000 REV. BIAS E TO B
							10
2N5303	MOT	N	Transistor, High Power, NPN	Not Applicable			
400	0188	SS	1500 Ohms	100E-12 F	400 N/R	10	PASSED
							43000 REV. BIAS E TO B
							10
2N5344	MOT	N	Transistor, High Power, PNP	Not Applicable			
400	1287	SS	1500 Ohms	100E-12 F	400 N/R	10	PASSED
							43000 REV. BIAS E TO B
							10
2N5415	N/R	N	Transistor, Low Power, PNP	Not Applicable			
232	N/R	N/R	N/R Ohms	100E-12 F	1 N/R	1	1 FAILED
							22529 N/R
							13

RAC ESD Database

Part Number	Part ESD		Part Description	Technology			
	Mfr	Class		Not Applicable			
2N5416	N/R	3	Transistor, Low Power, PNP				
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses	Test Number
	030	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1
					10000 N/R	1 FAILED	10000 N/R
							103
							252
							13
2N5416	MOT	N	Transistor, Low Power, PNP				
	400	1287 SS	1500 Ohms	100E-12 F	400 N/R	10 FAILED	40000 REV. BIAS E TO B
							122
							0
							10
2N5524	N/R	2	Transistor, Field Effect, Junction, N-Channel				
	028	N/R	SS	1500 Ohms	117E-12 F	30 N/R	5 PASSED
							2500 N/R
							102
							252
							13
2N5582	MOT	N	Transistor, Low Power, NPN				
	400	1287 SS	1500 Ohms	100E-12 F	400 N/R	10 FAILED	40000 REV. BIAS E TO B
							122
							0
							10
2N5663	N/R	N	Transistor, High Power, NPN				
	232	N/R	N/R	Ohms	100E-12 F	1 N/R	1 FAILED
							28942 N/R
							102
							184
							13
2N5664	UNI	3	Transistor, High Power, NPN				
	436	1186 SS	1500 Ohms	100E-12 F	18 N/R	5 PASSED	4000 N/R
							5
							252
							3
2N5664	PPI	3	Transistor, High Power, NPN				
	436	1186 SS	1500 Ohms	100E-12 F	18 N/R	5 PASSED	4000 N/R
							5
							252
							3
							3

RAC ESD Database

Part Number	Part ES D		Part Description	Technology												
	Mfr Class	PPI		Test Date	Test Type	Resistance	Capacitance	Pulses	Number Code	Date Devices	Test Result	Voltage Pin Combination	Failure Criteria	Test Remarks	General Remarks	
2N5665		PPI	3	Transistor, High Power, NPN	436	1186 SS	1500 Ohms	100E-12 F	18 N/R	2 PASSED	4000 N/R	5	252	3		
2N5665		UNI	3	Transistor, High Power, NPN	436	1186 SS	1500 Ohms	100E-12 F	18 N/R	1 PASSED	4000 N/R	5	252	3		
2N5665		SOL	3	Transistor, High Power, NPN	436	1186 SS	1500 Ohms	100E-12 F	18 N/R	5 PASSED	4000 N/R	5	252	3		
2N5666		VAR	3	Transistor, High Power, NPN	402	0887 SS	1500 Ohms	100E-12 F	5 N/R	4 FAILED	10000 N/R	68	280	13		
2N5672		PPI	3	Transistor, High Power, NPN	436	1186 SS	1500 Ohms	100E-12 F	18 N/R	3 PASSED	4000 N/R	5	252	3		
2N5682		N/R	3	Transistor, High Power, PNP	030	N/R	N/R	1500 Ohms	100E-12 F	1 FAILED	10000 N/R	103	252	13		
2N5685		MOT	N	Transistor, High Power, NPN	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED	43000 REV. BIAS E TO B	123	0	10		
2N5686		MOT	N	Transistor, High Power, NPN	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED	43000 REV. BIAS E TO B	123	0	10		

RAC ESD Database

Part Number	Part ESD		Part Description	Test				Technology	
	Mfr	Class		Test Date	Test Type	Resistance	Capacitance	Number	Test
2N5745	N/R	N	Transistor, High Power, PNP	232	N/R	N/R	Ohms	100E-12 F	1 N/R
								1 N/R	88158 N/R
								1 FAILED	88158 N/R
2N5745	MOT	N	Transistor, High Power, PNP	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED
								43000 REV. BIAS E TO B	123 0 10
2N576A	ETC	2	Transistor, Low Power, PNP	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R
								3840 E(+) B(-)	102 189 13
2N5794	RAY	2	Transistor, Multiple, Differ. Amplifier	436	1186 SS	1500 Ohms	100E-12 F	17 N/R	5 FAILED
								3500 EMITTER TO BASE	5 252 3
2N5794	MOT	2	Transistor, Multiple, Differ. Amplifier	436	0488 SS	1500 Ohms	100E-12 F	16 N/R	5 FAILED
								3000 COLLECTOR TO BASE	5 252 3
				436	1186 SS	1500 Ohms	100E-12 F	17 N/R	5 FAILED
								3500 EMITTER TO BASE	5 252 3
2N5796	MOT	3	Transistor, Multiple, Differ. Amplifier	436	1186 SS	1500 Ohms	100E-12 F	18 N/R	5 PASSED
								4000 N/R	5 252 3
2N5874	MOT	N	Transistor, High Power, NPN	400	0188 SS	1500 Ohms	100E-12 F	400 N/R	10 PASSED
								43000 REV. BIAS E TO B	123 0 10

RAC ESD Database

Part Number	Part ES0	Mfr Class	Description	Test Date	Test Type	Resistance	Capacitance	Pulses	Number Code	Date	Devices	Test Result	Test Voltage	Pin Combination	Technology	
															Failure Criteria	General Remarks
2N5877	MOT	N	Transistor, High Power, NPN	400	0188 SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000 REV.	BIAS E TO B	123	0	10
2N598	G1	N	Transistor, Low Power, PNP	029	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	19658 B(+)	E(-)	102	189	13
2N6040	MOT	N	Transistor, Multiple, Darlington	400	1287 SS	1500 Ohms	100E-12 F	297	N/R	10	FAILED	29700 REV.	BIAS E TO B	122	0	10
2N6052	N/R	3	Transistor, Multiple, Darlington	030	N/R	1500 Ohms	100E-12 F	1	N/R	1	PASSED	15300	N/R	103	252	13
2N6055	MOT	N	Transistor, Multiple, Darlington	400	1287 SS	1500 Ohms	100E-12 F	263	N/R	10	FAILED	26300 REV.	BIAS E TO B	122	0	10
2N6059	N/R	3	Transistor, Multiple, Darlington	030	N/R	1500 Ohms	100E-12 F	1	N/R	1	PASSED	15300	N/R	103	252	13
2N6129	MOT	N	Transistor, High Power, NPN	400	1287 SS	1500 Ohms	100E-12 F	383	N/R	10	FAILED	38300 REV.	BIAS E TO B	122	0	10
2N618	MOT	N	Transistor, High Power, NPN	029	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	26070 B(+)	E(-)	102	189	13

RAC ESD Database

Part Number	Part	Part ESD		Part Description	Technology												
		Mfr	Class		Not Applicable												
2N6191	SOL	3	Transistor, High Power, PNP														
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses	Number	Date	Test Devices	Test Result	Test Voltage	Pin Combination	Failure Criteria	Test Remarks	General Remarks		
	392	1286	SS	1500 Ohms	100E-12 F	1	N/R	1	N/R	2	FAILED	9000 C-E TO BASE (+ -)	19	25	13		
2N6212	N/R	3	Transistor, High Power, PNP														
	060	N/R	GN	1500 Ohms	100E-12 F	5	N/R	6	PASSED	4000	N/R		102	252	13		
2N6277	MOT	N	Transistor, High Power, NPN														
	400	0188	SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	REV. BIAS E TO B		123	0	10		
2N6284	MOT	N	Transistor, Multiple, Darlington														
	400	0188	SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	REV. BIAS E TO B		123	0	10		
2N6287	MOT	N	Transistor, Multiple, Darlington														
	400	0188	SS	1500 Ohms	100E-12 F	400	N/R	10	PASSED	43000	REV. BIAS E TO B		123	0	10		
2N6298	MOT	N	Transistor, Multiple, Darlington														
	400	1287	SS	1500 Ohms	100E-12 F	347	N/R	10	FAILED	34700	REV. BIAS E TO B		122	0	10		
2N6299	MOT	N	Transistor, Multiple, Darlington														
	400	1287	SS	1500 Ohms	100E-12 F	344	N/R	10	FAILED	34400	REV. BIAS E TO B		122	0	10		
2N6301	MOT	N	Transistor, Multiple, Darlington														
	400	1287	SS	1500 Ohms	100E-12 F	224	N/R	10	FAILED	22400	REV. BIAS E TO B		122	0	10		

RAC ESD Database

Part Number	Part	Part ESD										Technology					
		Mfr Class	Description								Not Applicable						
2N6379	MOT	N	Transistor, High Power, PNP										Not Applicable				
			Test Date	Test Type	Test Resistance	Test Capacitance	Test Number	Date	Code	Devices	Test Result	Test Voltage		Pin Combination			
	400	0188	SS	1500	Ohms	100E-12	F	400	N/R	10	PASSED	43000	REV.	BIAS E TO B	123	0	10
2N6385	MOT	2	Transistor, Multiple, Darlington										Not Applicable				
			Test Date	Test Type	Test Resistance	Test Capacitance	Test Number	Date	Code	Devices	Test Result	Test Voltage		Pin Combination			
	400	0188	SS	1500	Ohms	100E-12	F	31	N/R	10	FAILED	3017	REV.	BIAS E TO B	123	0	10
2N6437	MOT	N	Transistor, High Power, PNP										Not Applicable				
			Test Date	Test Type	Test Resistance	Test Capacitance	Test Number	Date	Code	Devices	Test Result	Test Voltage		Pin Combination			
	400	0188	SS	1500	Ohms	100E-12	F	400	N/R	10	PASSED	43000	REV.	BIAS E TO B	123	0	10
2N6438	MOT	N	Transistor, High Power, PNP										Not Applicable				
			Test Date	Test Type	Test Resistance	Test Capacitance	Test Number	Date	Code	Devices	Test Result	Test Voltage		Pin Combination			
	400	1287	SS	1500	Ohms	100E-12	F	400	N/R	10	FAILED	4000J	REV.	BIAS E TO B	122	0	10
2N6547	MOT	N	Transistor, High Power, NPN										Not Applicable				
			Test Date	Test Type	Test Resistance	Test Capacitance	Test Number	Date	Code	Devices	Test Result	Test Voltage		Pin Combination			
	400	0188	SS	1500	Ohms	100E-12	F	400	N/R	10	PASSED	43000	REV.	BIAS E TO B	123	0	10
2N656	TEX	3	Transistor, Low Power, PNP										Not Applicable				
			Test Date	Test Type	Test Resistance	Test Capacitance	Test Number	Date	Code	Devices	Test Result	Test Voltage		Pin Combination			
	029	N/R	N/R	1500	Ohms	100E-12	F	1	N/R	1	FAILED	12953	E(+)	B(-)	102	189	13
2N657	TEX	N	Transistor, Low Power, PNP										Not Applicable				
			Test Date	Test Type	Test Resistance	Test Capacitance	Test Number	Date	Code	Devices	Test Result	Test Voltage		Pin Combination			
	029	N/R	N/R	1500	Ohms	100E-12	F	1	N/R	1	FAILED	23103	E(+)	B(-)	102	189	13
2N657A	GE	N	Transistor, Low Power, PNP										Not Applicable				
			Test Date	Test Type	Test Resistance	Test Capacitance	Test Number	Date	Code	Devices	Test Result	Test Voltage		Pin Combination			
	029	N/R	N/R	1500	Ohms	100E-12	F	1	N/R	1	FAILED	26290	E(+)	B(-)	102	189	13

RAC ESD Database

Part Number	Part ESD		Part Description	Technology			
	Mfr	Class		Not Applicable			
2N6603	MOT	3	Transistor, Microwave/RF, Bipolar	Not Applicable			
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses	Test Number
	400	1287	SS	1500 Ohms	100E-12 F	48 N/R	10
2N6604	MOT	3	Transistor, Microwave/RF, Bipolar	Not Applicable			
	400	0188	SS	1500 Ohms	100E-12 F	65 N/R	10
2N6649	MOT	N	Transistor, Multiple, Darlington	Not Applicable			
	400	1287	SS	1500 Ohms	100E-12 F	377 N/R	10
2N6650	MOT	N	Transistor, Multiple, Darlington	Not Applicable			
	400	0188	SS	1500 Ohms	100E-12 F	400 N/R	10
2N6660	IRC	1	Transistor, Field Effect, MOS, N-Channel	Not Applicable			
	393	0483	SS	1500 Ohms	100E-12 F	1 N/R	1
2N6661	SIX	1	Transistor, Field Effect, MOS, N-Channel	Not Applicable			
	396	1081	SS	1500 Ohms	150E-12 F	1 N/R	2
2N6756	IRC	1	Transistor, Field Effect, MOS, N-Channel	Not Applicable			
	392	1186	SS	1500 Ohms	100E-12 F	1 N/R	6
2N6758	IRC	1	Transistor, Field Effect, MOS, N-Channel	Not Applicable			
	392	1186	SS	1500 Ohms	100E-12 F	1 N/R	5

RAC ESD Database

Part Number	Part ESD		Part Description	Technology			
	Mfr Class	Class		Not Applicable			
2N6762	MOT	1	Transistor, Field Effect, MOS, N-Channel				
	Test Date	Test Type	Test Resistance	Test Capacitance	Test Voltage	Test Pin Combination	General Remarks
	400	1287 SS	1500 Ohms	100E-12 F	1500 REV.	BIAS E TO B	10
							122 261
2N6764	IRC	1	Transistor, Field Effect, MOS, N-Channel	Not Applicable			
396	1181 SS	1500 Ohms	150E-12 F	1 N/R	1 FAILED	100 G-S AND G-D (+ -)	13
436	1186 SS	1500 Ohms	100E-12 F	9 N/R	1 FAILED	1000 SOURCE TO GATE	3
436	1186 SS	1500 Ohms	100E-12 F	17 N/R	1 FAILED	3500 SOURCE TO GATE	3
436	1186 SS	1500 Ohms	100E-12 F	18 N/R	1 PASSED	4000 N/R	3
					1 PASSED	4000 N/R	3
436	1186 SS	1500 Ohms	100E-12 F	16 N/R	5 FAILED	3000 SOURCE TO GATE	3
2N6764	SIX	2	Transistor, Field Effect, MOS, N-Channel	Not Applicable			
436	1186 SS	1500 Ohms	100E-12 F	15 N/R	5 FAILED	2500 SOURCE TO GATE	3
2N6764	RCA	1	Transistor, Field Effect, MOS, N-Channel	Not Applicable			
436	1186 SS	1500 Ohms	100E-12 F	4 N/R	1 FAILED	500 GATE TO DRAIN	3
436	1186 SS	1500 Ohms	100E-12 F	18 N/R	5 PASSED	4000 N/R	3
					1 PASSED	4000 N/R	3
2N6764	SIL	1	Transistor, Field Effect, MOS, N-Channel	Not Applicable			
436	1186 SS	1500 Ohms	100E-12 F	12 N/R	5 FAILED	1500 SOURCE TO GATE	3

RAC ESD Database

Part Number	Part ESD		Part Description	Technology			
	Mfr	Class		Not	Applicable	Failure Test Criteria	General Remarks
2N6764-2	SIL	3	Transistor, Field Effect, MOS, N-Channel			5	252
	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses	Test Voltage	Test Pin Combination
436	1186	SS	1500 Ohms	100E-12 F	18 N/R	20 PASSED	4000 N/R
2N6766	RCA	1	Transistor, Field Effect, MOS, N-Channel			Not Applicable	
436	1186	SS	1500 Ohms	100E-12 F	4 N/R	1 FAILED	500 SOURCE TO GATE
2N6768	IRC	1	Transistor, Field Effect, MOS, N-Channel			Not Applicable	
396	1081	SS	1500 Ohms	150E-12 F	1 N/R	3 FAILED	500 G-S AND G-D (+ -)
2N6782	RCA	1	Transistor, Field Effect, MOS, N-Channel			Not Applicable	
436	1186	SS	1500 Ohms	100E-12 F	9 N/R	1 FAILED	1000 GATE TO SOURCE
2N6796	IRC	3	Transistor, Field Effect, MOS, N-Channel			Not Applicable	
436	1186	SS	1500 Ohms	100E-12 F	18 N/R	2 PASSED	4000 N/R
2N6796	RCA	2	Transistor, Field Effect, MOS, N-Channel			Not Applicable	
436	1186	SS	1500 Ohms	100E-12 F	16 N/R	1 FAILED	3000 GATE TO SOURCE
2N685	GE	N	Thyristor, SCR			Not Applicable	
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	26756 B(+) E(-)
2N687	GE	N	Thyristor, SCR			Not Applicable	
029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED	88223 B(+) E(-)

RAC ESD Database

Part Number	Part ESD		Part Description	Technology			
	Mfr Class	3		Not Applicable			
Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses	Test Code	Test Voltage
029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	10153 E(+) B(-)
2N699	FSC	3	Transistor, Low Power, NPN				
029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	14674 E(+) B(-)
2N706	TEX	2	Transistor, Low Power, NPN				
029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	2439 E(+) B(-)
2N706	MOT	3	Transistor, Low Power, NPN				
400	1287 SS	1500 Ohms	100E-12 F	42	N/R	10	4200 REV. BIAS E TO B
2N708	FSC	3	Transistor, Low Power, NPN				
029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	4925 E(+) B(-)
2N718	MOT	N	Transistor, Low Power, NPN				
400	0188 SS	1500 Ohms	100E-12 F	315	N/R	10	43000 REV. BIAS E TO B
2N718A	MOT	3	Transistor, Low Power, NPN				
029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	14863 E(+) B(-)
2N736	MOT	3	Transistor, Low Power, NPN				
029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	9191 E(+) B(-)

RAC ESD Database

Part Number	Part ESD		Part Description	Test				Technology								
	Mfr Class	Test		Number	Date	Test	Not Applicable									
2N760	MOT	3	Transistor, Low Power, NPN	Test	Test	Test	Test	Test	Test							
				Source Date	Type	Resistance	Capacitance	Pulses	Code	Devices	Voltage Pin Combination	Failure Criteria	Test Remarks	General Remarks		
				029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	5118 E(+) B(-)	102	189	13
2N834	RAY	2	Transistor, Low Power, NPN	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	3434 E(+) B(-)	102	188	13
2N859	TEC	3	Transistor, Low Power, PNP	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	11476 B(+) E(-)	102	189	13
2N869A	FSC	2	Transistor, Low Power, PNP	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	3823 E(+) B(-)	102	188	13
2N886A	N/R	2	Thyristor, SCR	048	N/R	SS	100 Ohms	218E-12 F	1	N/R	1	FAILED	680 N/R	17	252	23
2N916	RAY	3	Transistor, Low Power, NPN	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	6502 E(+) B(-)	102	188	13
2N918	TEC	2	Transistor, Microwave/RF, Bipolar	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	FAILED	2085 E(+) B(-)	102	188	13
2N918	MOT	1	Transistor, Microwave/RF, Bipolar	400	1287 SS	1500 Ohms	100E-12 F	1900 REV. BIAS E TO B	19	N/R	10	FAILED		122	0	10

RAC ESD Database

Part Number	(Cont'd)	Part ESD		Part Description											Technology	
		Mfr Class	VAR		Test Date	Test Type	Resistance	Capacitance	Pulses	Date Code	Number Devices	Test Result	Voltage Pin Combination	Failure Criteria	Test Remarks	General Remarks
2N918		1	Transistor, Microwave/RF, Bipolar													
		0787	SS	1500 Ohms	100E-12 F	5	N/R		4	FAILED	1600 N/R	68	278	13		
2N927		TEC	3	Transistor, Low Power, PNP												
		029	N/R	1500 Ohms	100E-12 F	1	N/R		1	FAILED	6412 B(+) E(-)	102	189	13		
2N930		FSC	3	Transistor, Low Power, NPN												
		029	N/R	1500 Ohms	100E-12 F	1	N/R		1	FAILED	6156 E(+) B(-)	102	189	13		
2N930		MOT	3	Transistor, Low Power, NPN												
		400	1287 SS	1500 Ohms	100E-12 F	83	N/R		10	FAILED	8300 REV. BIAS E TO B	122	0	10		
2N930A		SOL	3	Transistor, Low Power, NPN												
		029	N/R	1500 Ohms	100E-12 F	1	N/R		1	FAILED	4221 E(+) B(-)	102	189	13		
2N956		MOT	3	Transistor, Low Power, NPN												
		029	N/R	1500 Ohms	100E-12 F	1	N/R		1	FAILED	8806 E(+) B(-)	102	189	13		
30FQ045		IRC	1	Diode, Rectifier, Power Schottky												
		402	0887 SS	1500 Ohms	100E-12 F	5	N/R		6	FAILED	10 N/R	68	252	13		
3133-02-237-001		ALP	1	Diode, Microwave, Pin												
		392	0886 SS	1500 Ohms	100E-12 F	1	N/R		5	FAILED	150 A-C (+ -)	19	252	13		

Part Number (Cont'd)	Part ESD		Part Description	Technology											
	Mfr Class	Part		Not Applicable											
3133-02-237-001	ALP	1	Diode, Microwave, Pin												
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses	Number Date	Test Devices	Test Result	Test Voltage	Test Pin Combination	Failure Criteria	Test Remarks	General Remarks	
	392	0886	SS	1500 Ohms	100E-12 F	1	N/R	5	FAILED	150 C-A THEN A-C		19	156	13	
3-058472-001	MOT	3	Transistor, Multiple, Matched Pair	Not Applicable											
	436	0588	SS	1500 Ohms	100E-12 F	18	8728	3	PASSED	4000 N/R		5	169	3	
3N128	RCA	1	Transistor, Field Effect, MOS, N-Channel	Not Applicable											
	348	N/R	GN	1500 Ohms	100E-12 F	50	N/R	1	FAILED	50 GATE(+) SOURCE(-)		72	252	13	
	348	N/R	GN	1500 Ohms	100E-12 F	200	N/R	1	PASSED	50 GATE(+) SOURCE(-)		117	252	13	
	349	N/R	GN	1500 Ohms	100E-12 F	200	N/R	1	PASSED	60 GATE(+) SOURCE(-)		117	252	13	
	350	N/R	GN	1500 Ohms	100E-12 F	200	N/R	1	PASSED	75 GATE(+) SOURCE(-)		117	252	13	
	351	N/R	GN	1500 Ohms	100E-12 F	1	N/R	5	FAILED	92 GATE(+) SOURCE(-)		72	252	13	
								15	PASSED	92 GATE(+) SOURCE(-)		117	252	13	
	352	N/R	GN	1500 Ohms	100E-12 F	1	N/R	6	FAILED	95 GATE(+) SOURCE(-)		72	252	13	
	352	N/R	GN	1500 Ohms	100E-12 F	2	N/R	1	FAILED	95 GATE(+) SOURCE(-)		116	252	13	
	352	N/R	GN	1500 Ohms	100E-12 F	15	N/R	3	FAILED	95 GATE(+) SOURCE(-)		118	252	13	
								1	FAILED	95 GATE(+) SOURCE(-)		72	252	13	
	352	N/R	GN	1500 Ohms	100E-12 F	20	N/R	1	FAILED	95 GATE(+) SOURCE(-)		118	252	13	
	352	N/R	GN	1500 Ohms	100E-12 F	75	N/R	2	FAILED	95 GATE(+) SOURCE(-)		118	252	13	
	352	N/R	GN	1500 Ohms	100E-12 F	100	N/R	1	FAILED	95 GATE(+) SOURCE(-)		118	252	13	

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RAC ESD Database

Part Number (Cont'd) 3N128	Part ESD		Part		Technology										
	Mfr	Class	Description										Failure Test Criteria	Test Remarks	General Remarks
			1 Transistor, Field Effect, MOS, N-Channel												
Test	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses	Test Number	Test Code	Test Devices	Test Result	Test Voltage	Test Pin Combination	Test Remarks	Test Remarks	Test Remarks
352	N/R	GN	GN	1500 Ohms	100E-12 F	150	N/R	1	N/R	1 FAILED	95	GATE(+) SOURCE(-)	72	252	13
352	N/R	GN	GN	1500 Ohms	100E-12 F	200	N/R	4	N/R	4 PASSED	95	GATE(+) SOURCE(-)	117	252	13
353	N/R	GN	GN	1500 Ohms	100E-12 F	1	N/R	7	N/R	7 FAILED	100	GATE(+) SOURCE(-)	72	252	13
353	N/R	GN	GN	1500 Ohms	100E-12 F	2	N/R	1	N/R	1 FAILED	100	GATE(+) SOURCE(-)	72	252	13
353	N/R	GN	GN	1500 Ohms	100E-12 F	8	N/R	1	N/R	1 FAILED	100	GATE(+) SOURCE(-)	118	252	13
353	N/R	GN	GN	1500 Ohms	100E-12 F	10	N/R	4	N/R	4 FAILED	100	GATE(+) SOURCE(-)	118	252	13
353	N/R	GN	GN	1500 Ohms	100E-12 F	15	N/R	4	N/R	4 FAILED	100	GATE(+) SOURCE(-)	118	252	13
353	N/R	GN	GN	1500 Ohms	100E-12 F	30	N/R	1	N/R	1 FAILED	100	GATE(+) SOURCE(-)	72	252	13
353	N/R	GN	GN	1500 Ohms	100E-12 F	1	N/R	1	N/R	1 FAILED	100	GATE(+) SOURCE(-)	117	252	13
353	N/R	GN	GN	1500 Ohms	100E-12 F	100	N/R	1	N/R	1 FAILED	100	GATE(+) SOURCE(-)	118	252	13
353	N/R	GN	GN	1500 Ohms	100E-12 F	175	N/R	2	N/R	2 FAILED	100	GATE(+) SOURCE(-)	72	252	13
354	N/R	GN	GN	1500 Ohms	100E-12 F	1	N/R	2	N/R	2 FAILED	103	GATE(+) SOURCE(-)	116	252	13
354	N/R	GN	GN	1500 Ohms	100E-12 F	9	N/R	9	N/R	9 FAILED	103	GATE(+) SOURCE(-)	72	252	13
354	N/R	GN	GN	1500 Ohms	100E-12 F	9	N/R	9	N/R	9 PASSED	103	GATE(+) SOURCE(-)	117	252	13
355	N/R	GN	GN	1500 Ohms	100E-12 F	1	N/R	6	N/R	6 FAILED	105	GATE(+) SOURCE(-)	72	252	13
355	N/R	GN	GN	1500 Ohms	100E-12 F	5	N/R	1	N/R	1 FAILED	105	GATE(+) SOURCE(-)	118	252	13
355	N/R	GN	GN	1500 Ohms	100E-12 F	6	N/R	3	N/R	3 FAILED	105	GATE(+) SOURCE(-)	118	252	13
355	N/R	GN	GN	1500 Ohms	100E-12 F	7	N/R	1	N/R	1 FAILED	105	GATE(+) SOURCE(-)	118	252	13
355	N/R	GN	GN	1500 Ohms	100E-12 F	8	N/R	2	N/R	2 FAILED	105	GATE(+) SOURCE(-)	118	252	13

RAC ESD Database

Part Number (Cont'd)	Part ESD		Part		Technology													
	Mfr	Class	Description										Not Applicable					
			1 Transistor, Field Effect, MOS, N-Channel															
3N128	RCA	Test	Test Date	Test Type	Resistance	Test Capacitance	Test	Number	Date	Pulses	Code	Devices	Test Result	Test Voltage	Pin Combination	Failure Criteria	Test Remarks	General Remarks
																		</

RAC ESD Database

Part Number	(Cont'd)	Part ESD		Part Description	Technology									
		Mfr	Class		Not Applicable									
3N128		RCA	1	Transistor, Field Effect, MOS, N-Channel										
		Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	General
		Source	Date	Type	Resistance	Capacitance	Pulses	Code	Devices	Result	Voltage	Pin Combination	Failure Criteria	Remarks
357		N/R	N/R	GN	1500 Ohms	100E-12 F	3	N/R	1	FAILED	115	GATE(+) SOURCE(-)	72	252
357		N/R	N/R	GN	1500 Ohms	100E-12 F	4	N/R	3	FAILED	115	GATE(+) SOURCE(-)	118	252
357		N/R	N/R	GN	1500 Ohms	100E-12 F	5	N/R	2	FAILED	115	GATE(+) SOURCE(-)	118	252
357		N/R	N/R	GN	1500 Ohms	100E-12 F	10	N/R	1	FAILED	115	GATE(+) SOURCE(-)	72	252
357		N/R	N/R	GN	1500 Ohms	100E-12 F	25	N/R	1	FAILED	115	GATE(+) SOURCE(-)	118	252
358		N/R	N/R	GN	1500 Ohms	100E-12 F	1	N/R	1	FAILED	125	GATE(+) SOURCE(-)	72	252
359		N/R	N/R	GN	1500 Ohms	100E-12 F	1	N/R	1	FAILED	150	GATE(+) SOURCE(-)	72	252
360		N/R	N/R	GN	1500 Ohms	100E-12 F	1	N/R	1	FAILED	200	GATE(+) SOURCE(-)	72	252
3N169		MOT	1	Transistor, Field Effect, MOS, N-Channel	Not Applicable									
400		1287 SS	1500 Ohms	100E-12 F	8	N/R	10	FAILED	800 REV. BIAS E TO B	122	0	10		
3N170		ISL	1	Transistor, Field Effect, MOS, N-Channel	Not Applicable									
246		N/R	GN	1500 Ohms	100E-12 F	200	N/R	1	FAILED	80	G(+) S(-)	63	252	13
247		N/R	GN	1500 Ohms	100E-12 F	5	N/R	1	PASSED	87	G(+) S(-)	76	252	13
248		N/R	GN	1500 Ohms	100E-12 F	200	N/R	1	PASSED	90	G(+) S(-)	76	252	13
248		N/R	GN	1500 Ohms	100E-12 F	2	N/R	1	FAILED	90	G(+) S(-)	63	252	13
248		N/R	GN	1500 Ohms	100E-12 F	200	N/R	7	PASSED	90	G(+) S(-)	76	252	13

RAC ESD Database

Part Number 3N170	Part ESD		Part		Description										Technology	
	Mfr	Class	1 Transistor, Field Effect, MOS, N-Channel												Not Applicable	
ISL			1													
Test			Test		Test		Test		Test		Test		Test		Test	
Source			Date		Type		Resistance		Capacitance		Pulses		Code		Number	
248			N/R		GN		1500 Ohms		100E-12 F		1		N/R		1	

RAC ESD Database

Part Number (Cont'd) 3N170	Part ESD Part		Description		Technology	
	Mfr	Class	Description		Not Applicable	
	ISL	1	Transistor, Field Effect, MOS, N-Channel			
Test		Test	Test	Test	Test	General
Source	Date	Type	Resistance	Capacitance	Number	Remarks
254	N/R	GN	1500 Ohms	100E-12 F	4 N/R	120 252 13
254	N/R	GN	1500 Ohms	100E-12 F	5 N/R	120 252 13
254	N/R	GN	1500 Ohms	100E-12 F	6 N/R	75 252 13
254	N/R	GN	1500 Ohms	100E-12 F	8 N/R	75 252 13
254	N/R	GN	1500 Ohms	100E-12 F	200 N/R	76 252 13
254	N/R	GN	1500 Ohms	100E-12 F	1 N/R	120 252 13
254	N/R	GN	1500 Ohms	100E-12 F	2 N/R	119 252 13
255	N/R	GN	1500 Ohms	100E-12 F	19 N/R	119 252 13
256	N/R	GN	1500 Ohms	100E-12 F	45 N/R	120 252 13
256	N/R	GN	1500 Ohms	100E-12 F	21 N/R	74 252 13
256	N/R	GN	1500 Ohms	100E-12 F	1 N/R	119 252 13
256	N/R	GN	1500 Ohms	100E-12 F	200 N/R	120 252 13
257	N/R	GN	1500 Ohms	100E-12 F	1 N/R	76 252 13
258	N/R	GN	1500 Ohms	100E-12 F	3 N/R	75 252 13
259	N/R	GN	1500 Ohms	100E-12 F	1 N/R	120 252 13
259	N/R	GN	1500 Ohms	100E-12 F	2 N/R	74 252 13
259	N/R	GN	1500 Ohms	100E-12 F	2 N/R	120 252 13

RAC ESD Database

Part Number	Part	Part ESD		Part Description										Technology																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
		Mfr	Class	Transistor, Field Effect, MOS, N-Channel										Not Applicable																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
3N170	ISL	1	Transistor, Field Effect, MOS, N-Channel	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test

RAC ESD Database

Part Number	Part	Part ESD		Part Description	Mfr Class										Technology																				
		Mfr	Class		1 Transistor, Field Effect, MOS, N-Channel										Not Applicable																				
3N204		MOI	1	Transistor, Field Effect, MOS, N-Channel	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test	Number	Date	Number	Test	Test Voltage	Pin Combination	Failure Criteria	Test Remarks	General Remarks																
																				393	0385	SS	1500	Ohms	100E-12	F	1	N/R	2	FAILED	2000	GATE(+) SOURCE(-)	102	252	13
47-92		NSC	1	Transistor, Microwave/RF, Bipolar													Not Applicable																		
		421	0184	SS	1500	Ohms	100E-12	F		9	N/R	1	FAILED	1800	N/R	102	252	13																	
479-1464-100		UNI	3	Diode, Small Signal, General Purpose													Not Applicable																		
		436	1186	SS	1500	Ohms	100E-12	F		18	N/R	13	PASSED	4000	N/R	5	252	3																	
4E413-2		MAS	1	Diode, Microwave, Schottky Barrier													Not Applicable																		
		392	1086	SS	1500	Ohms	100E-12	F		1	N/R	5	FAILED	400	A-C (+ -)	19	272	13																	
4N22A		TRW	2	Optoelectronic Dev., Photocoupler													Unknown																		
		392	1086	SS	1500	Ohms	100E-12	F		1	N/R	7	FAILED	3500	A-C, C-B & B-E (+ -)	19	71	13																	
4N24		MPI	2	Optoelectronic Dev., Photocoupler													Unknown																		
		398	0285	GN	1500	Ohms	100E-12	F		5	N/R	3	PASSED	2000	SEE REMARKS	112	192	25																	
4N49		TEX	2	Optoelectronic Dev., Photocoupler													Unknown																		
		436	0588	SS	1500	Ohms	100E-12	F		18	N/R	1	FAILED	4000	BASE TO COLLECTOR	5	252	3																	
												1	FAILED	4000	EMITTER TO BASE	5	252	3																	
		436	0588	SS	1500	Ohms	100E-12	F		16	N/R	1	FAILED	3000	BASE TO COLLECTOR	5	252	3																	

RAC ESD Database

Part Number	Part	Part ESD		Part Description	Technology
		Mfr	Class		
4N49		TEX	2	Optoelectronic Dev., Photocoupler	Unknown

RAC ESD Database

Part Number	Part ESD		Part Description	Technology			
	Mfr	Class		Not Applicable			
72515	MAS	1	Transistor, Microwave/RF				
	Test Date	Test Type	Test Resistance	Test Capacitance	Number Devices	Test Result	Test Voltage Pin Combination
	410	1181 GN	1500 Ohms	100E-12 F	10 N/R	1 PASSED	1000 N/R
80354	MAS	1	Transistor, Microwave/RF				
	410	1181 GN	1500 Ohms	100E-12 F	20 N/R	1 PASSED	1000 N/R
	411	1181 GN	1M Ohms	100E-12 F	20 N/R	1 PASSED	1000 N/R
85HQ045	IRC	3	Diode, Rectifier, Power Schottky				
	402	0887 SS	1500 Ohms	100E-12 F	5 N/R	3 FAILED	10000 N/R
88000	MAS	1	Transistor, Field Effect				
	409	1181 SS	1500 Ohms	100E-12 F	10 N/R	1 FAILED	600 N/R
88001	MAS	1	Transistor, Field Effect				
	409	1181 SS	1500 Ohms	100E-12 F	10 N/R	1 FAILED	600 N/R
88XXX	MAS	1	Transistor, Field Effect				
	405	0781 SS	1500 Ohms	100E-12 F	1 N/R	1 FAILED	1200 GATE-SOURCE
	406	0781 SS	1M Ohms	100E-12 F	1 N/R	2 FAILED	1200 GATE-SOURCE
	407	0781 SS	10M Ohms	100E-12 F	1 N/R	1 FAILED	400 GATE-SOURCE
	408	0781 SS	1M Ohms	100E-12 F	1 N/R	1 FAILED	1000 GATE-SOURCE

RAC ESD Database

Part Number	Part ESD		Part Description	Technology									
	Mfr	Class		Test	Test	Test	Test	Test	Test	Test	Test	Test	Test
AM9519A	AMD	2	Transistor, Low Power, PNP	Source Date	Type	Resistance	Capacitance	Pulses	Code	Devices	Result	Voltage	Pin Combination
				436	1186	SS	1500 Ohms	100E-12 F	15	N/R	1 FAILED	2500	INPUT TO GND
CLA3130-99	ALP	1	Diode, Microwave, Pin										
				392	0986	SS	1500 Ohms	100E-12 F	1	N/R	10 FAILED	400	A-C (+ -)
DN-50003-00	SEQ	1	Diode, Microwave, Pin										
				392	0986	SS	1500 Ohms	100E-12 F	1	N/R	10 FAILED	1100	A-C (+ -)
EN110A	MOT	3	Transistor, Microwave/RF										
				413	1087	SS	1500 Ohms	100E-12 F	15	N/R	5 FAILED	16000	BASE TO EMITTER
				413	1087	SS	1500 Ohms	100E-12 F	5	N/R	5 FAILED	10000	BASE TO EMITTER
				413	1087	SS	1500 Ohms	100E-12 F	70	N/R	5 PASSED	16000	BASE TO EMITTER
EN114B	MOT	N	Transistor, Microwave/RF										
				413	1087	SS	1500 Ohms	100E-12 F	40	N/R	4 PASSED	16000	BASE TO EMITTER
				413	1087	SS	1500 Ohms	100E-12 F	30	N/R	4 PASSED	16000	BASE TO EMITTER
				413	1087	SS	1500 Ohms	100E-12 F	15	N/R	4 PASSED	16000	BASE TO EMITTER
				413	1087	SS	1500 Ohms	100E-12 F	20	N/R	4 PASSED	16000	BASE TO EMITTER

RAC ESD Database

Part Number	Part	Part ESD		Description	Technology												
		Mfr	Class		Not Applicable												
EN12240	MOT	3	Transistor, Microwave/RF														
			Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test	Number Pulses	Number Date	Test Code	Test Result	Test Voltage	Test Pin Combination	Failure Criteria	Test Remarks	General Remarks
			413	1087	SS	1500 Ohms	100E-12 F		2	N/R	3	FAILED	16000	BASE TO EMITTER	23	191	13
413	1087	SS	1500 Ohms	100E-12 F		30	N/R	3	FAILED	16000	BASE TO EMITTER	23	191	13			
413	1087	SS	1500 Ohms	100E-12 F		50	N/R	3	FAILED	16000	BASE TO EMITTER	23	191	13			
FD777F	FSC	1	Diode, Small Signal, General Purpose														
			029	N/R	N/R	1500 Ohms	100E-12 F		1	N/R	1	FAILED	1017	N/R	102	188	13
FLV104	IIT	3	Optoelectronic Dev., Emitter, Single LED														
			386	N/R	N/R	1500 Ohms	100E-12 F		1	N/R	1	FAILED	17160	A(+) C(-)	101	190	13

RAC ESD Database

Part Number	Part ESD		Part		Technology									
	Mfr	Class	Description											
HLMP-1719	HEW	1	Optoelectronic Dev., Emitter, Single LED											Unknown
	Test	Test	Test	Number	Test	Test	Test	Test	Test	Test	Test	Test	Test	General
	Source	Date	Type	Resistance	Capacitance	Pulses	Code	Devices	Result	Voltage	Pin	Combination	Failure	Remarks
	403	0985	SS	1500 Ohms	100E-12 F	5	N/R	20	FAILED	100	REV.	BIAS	50	245
														13
HLMP-3001	HEW	3	Optoelectronic Dev., Emitter, Single LED										Unknown	
	403	0985	SS	1500 Ohms	100E-12 F	5	N/R	20	PASSED	15000	REV.	BIAS	50	245
														13
HLMP-3301	HEW	3	Optoelectronic Dev., Emitter, Single LED										Unknown	
	403	0985	SS	1500 Ohms	100E-12 F	20	N/R	20	FAILED	5000	REV.	BIAS	50	245
														13
HLMP-3401	HEW	3	Optoelectronic Dev., Emitter, Single LED										Unknown	
	403	0985	SS	1500 Ohms	100E-12 F	5	N/R	20	FAILED	5000	REV.	BIAS	50	245
														13
HLMP-3507	HEW	3	Optoelectronic Dev., Emitter, Single LED										Unknown	
	403	0985	SS	1500 Ohms	100E-12 F	5	N/R	20	PASSED	15000	REV.	BIAS	50	245
														13
HLMP-D400	HEW	3	Optoelectronic Dev., Emitter, Single LED										Unknown	
	403	0985	SS	1500 Ohms	100E-12 F	20	N/R	20	FAILED	5000	REV.	BIAS	50	245
														13
HLMP-D600	HEW	3	Optoelectronic Dev., Emitter, Single LED										Unknown	
	403	0985	SS	1500 Ohms	100E-12 F	5	N/R	20	PASSED	15000	REV.	BIAS	50	245
														13
HLMP-K100	HEW	3	Optoelectronic Dev., Emitter, Single LED										Unknown	
	403	0985	SS	1500 Ohms	100E-12 F	5	N/R	20	PASSED	15000	REV.	BIAS	50	245
														13

RAC ESD Database

Part Number	Part ESD		Part Description	Technology			
	Mfr	Class		Not Applicable			
HPUR-6503	HEW	1	Transistor, Field Effect, MOS, N-Channel				
	Test	Test	Test	Test	Test	Test	General
	Source	Date	Type	Resistance	Capacitance	Pulses	Code
396	1081	SS	1500	Ohms	150E-12	F	1 N/R
	3	FAILED	100	G-S AND G-D	(+ -)		
	102	252	13				
IRF322	RCA	1	Transistor, Field Effect, MOS, N-Channel	Not Applicable			
393	0384	SS	1500	Ohms	100E-12	F	1 N/R
	1	FAILED	1200	N/R			
	102	252	13				
IRF350	IRC	2	Transistor, Field Effect, MOS, N-Channel	Not Applicable			
393	0284	SS	1500	Ohms	100E-12	F	1 N/R
	1	FAILED	3500	N/R			
	102	252	13				
IRL60	IIT	3	Optoelectronic Dev., Emitter, Single LED, Infrared	Unknown			
386	N/R	N/R	1500	Ohms	100E-12	F	1 N/R
	1	FAILED	15870	A(+) C(-)			
	1	FAILED	4060	C(+) A(-)			
	101	190	13				
IVN5201TNF	ISL	1	Transistor, Field Effect, MOS, N-Channel	Not Applicable			
396	0582	SS	1500	Ohms	150E-12	F	1 N/R
	5	FAILED	100	G-S AND G-D	(+ -)		
	102	252	13				
LNA351	COO	N	Diode, Zener, Voltage Reference	Not Applicable			
029	N/R	N/R	1500	Ohms	100E-12	F	1 N/R
	1	FAILED	126405	N/R			
	102	189	13				
LVA356	N/R	N	Diode, Zener, Voltage Reference	Not Applicable			
048	N/R	SS	100	Ohms	218E-12	F	1 N/R
	1	PASSED	3000	N/R			
	14	252	23				
LVA51A	TRW	N	Diode, Zener, Voltage Reference	Not Applicable			
029	N/R	N/R	1500	Ohms	100E-12	F	1 N/R
	1	FAILED	124453	N/R			
	102	188	13				

RAC ESD Database

Part Number	Part ESD		Part Description	Test										Technology				
	Mfr TRW	Class		Test Type	Resistance	Capacitance	Number	Date	Pulses	Code	Devices	Test Result	Voltage	Pin Combination	Failure Criteria	Test Remarks	General Remarks	
LVA91A		N	Diode, Zener, Voltage Reference	029	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	1	1	1	1	102	189	13
MCT2		N/R	3 Optoelectronic Dev., Photocoupler, Phototrans. Output	030	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	1	1	1	1	103	252	13
MD-1151		ANZ	1 Diode, Special Function	392	1186	SS	1500 Ohms	100E-12 F	1	N/R	3	3	3	3	3	19	252	13
ME60		IIT	3 Optoelectronic Dev., Emitter, Single LED, Infrared	386	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	1	1	1	1	101	190	13
MJEC340		MOT	2 Transistor, Bipolar, NPN	392	1086	SS	1500 Ohms	100E-12 F	1	N/R	5	5	5	5	5	19	252	13
MLED900		IIT	3 Optoelectronic Dev., Emitter, Single LED, Infrared	386	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	1	1	1	1	101	190	13
MCM918		MOT	2 Transistor, Bipolar, NPN	392	1186	SS	1500 Ohms	100E-12 F	1	N/R	5	5	5	5	5	19	252	13

RAC ESD Database

Part Number	Part ESD		Part Description	Technology	
	Mfr	Class		Not Applicable	Not Applicable
MMF-2402	HAR	1	Transistor, Microwave/RF		
	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses
	392	0187 SS	1500 Ohms	100E-12 F	1 N/R
				5 FAILED	850 D & S TO G (+ - -)
					19 252 13
MR501	MOT	3	Diode, Rectifier, High Power		Not Applicable
	029	N/R	1500 Ohms	100E-12 F	1 N/R
				1 FAILED	9962 N/R
					102 188 13
MRF571	MOT	2	Transistor, Microwave/RF, Bipolar		Not Applicable
	392	1086 SS	1500 Ohms	100E-12 F	1 N/R
				5 PASSED	2750 B-E (+ - -)
					19 252 13
MTM1224	MOT	1	Transistor, Field Effect, Junction, N-Channel		Not Applicable
	396	1081 SS	1500 Ohms	150E-12 F	1 N/R
				4 FAILED	500 G-S AND G-D (+ - -)
					102 252 13
MTM15N05	MOT	1	Transistor, Field Effect, MOS, N-Channel		Not Applicable
	400	0188 SS	1500 Ohms	100E-12 F	68 N/R
				10 FAILED	680 N/R
					123 0 10
MTM6N60	MOT	1	Transistor, Field Effect, MOS, N-Channel		Not Applicable
	400	0188 SS	1500 Ohms	100E-12 F	14 N/R
				10 FAILED	1350 N/R
					123 0 10
MTP15N06	MOT	1	Transistor, Field Effect, MOS, N-Channel		Not Applicable
	400	0188 SS	1500 Ohms	100E-12 F	54 N/R
				10 FAILED	540 N/R
					123 0 10
MTP5N05	MOT	1	Transistor, Field Effect, MOS, N-Channel		Not Applicable
	400	0188 SS	1500 Ohms	100E-12 F	6 N/R
				10 FAILED	520 N/R
					123 0 10

RAC ESD Database

Part Number	Part	Part ESD		Mfr Class	Description	Technology Unknown									
		Test	Test			Test	Test	Test	Test	Test	Test	Test	Test	Test	
Source	Date	Type	Resistance	Capacitance	Pulses	Date	Code	Devices	Result	Voltage	Pin	Combination	Failure Criteria	Test Remarks	General Remarks
386	N/R	N/R	1500 Ohms	100E-12 F	1	N/R	1	N/R	1 FAILED	31950 A(+)	C(-)		101	190	13
									1 FAILED	8320 C(+)	A(-)		101	190	13
NE64587	NEC	3	Transistor, Microwave/RF												
402	0887 SS	1500 Ohms	100E-12 F		5	N/R	2	FAILED		4500	N/R		68	252	13
NEC327	NEC	1	Transistor, Bipolar, NPN												
392	1186 SS	1500 Ohms	100E-12 F		1	N/R	5	FAILED		2000	C-E TO BASE (+ -)		19	252	13
NEL230120	NEC	3	Transistor, Microwave/RF												
402	1087 SS	1500 Ohms	100E-12 F		5	N/R	2	FAILED		10000	N/R		68	252	13
NEL230153	NEC	3	Transistor, Microwave/RF												
402	1087 SS	1500 Ohms	100E-12 F		5	N/R	2	FAILED		10000	N/R		68	252	13
NEL230154	NEC	3	Transistor, Microwave/RF												
402	1087 SS	1500 Ohms	100E-12 F		5	N/R	2	FAILED		10000	N/R		68	252	13
NEL230163	NEC	3	Transistor, Microwave/RF												
402	1087 SS	1500 Ohms	100E-12 F		5	N/R	2	FAILED		10000	N/R		68	252	13
NEL230197	NEC	3	Transistor, Microwave/RF												
402	1087 SS	1500 Ohms	100E-12 F		5	N/R	2	FAILED		10000	N/R		68	252	13

RAC ESD Database

Part Number	Part ESD		Part Description	Technology			
	Mfr	Class		Test	Failure Criteria	Test Remarks	General Remarks
PT97018	TRW	1	Transistor, Microwave/RF				Not Applicable
QXTR-5916	HEW	2	Transistor, Microwave/RF				Not Applicable
392	0986	SS	1500 Ohms	100E-12 F	1 N/R	3 FAILED	2600 B-E (+ -)
						3 FAILED	2600 BASE TO EMITTER (+ -)
SD241	TRW	3	Diode, Rectifier, Power Schottky				Not Applicable
026	0281	SS	100 Ohms	200E-12 F	1 N/R	4 FAILED	1400 C(+) A(-)
SKA4504	TEK	1	Transistor				Not Applicable
014	N/R	SS	100 Ohms	100E-12 F	1 N/R	1 FAILED	475 B C
015	N/R	SS	1000 Ohms	100E-12 F	1 N/R	1 FAILED	1900 B C
SKA4504	N/R	N	Transistor				Not Applicable
016	N/R	SS	10K Ohms	100E-12 F	1 N/R	1 FAILED	5000 B C
SKA6516	TEK	1	Transistor				Not Applicable
014	N/R	SS	100 Ohms	100E-12 F	1 N/R	1 FAILED	450 B C
015	N/R	SS	1000 Ohms	100E-12 F	1 N/R	1 FAILED	1625 B C
SKA6516	N/R	N	Transistor				Not Applicable
016	N/R	SS	10K Ohms	100E-12 F	1 N/R	1 FAILED	7800 B C

RAC ESD Database

Part Number	Part ESD		Part Description	Technology			
	Mfr	Class		Not Applicable			
SM692-1	MOT	1	Transistor, Low Power, PNP				
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses	Test Number
	029	N/R	N/R	1500 Ohms	100E-12 F	1 N/R	1 FAILED
							1871 B(+) E(-)
							102 189 13
SP10962	TEX	3	Transistor, High Power, PNP	Not Applicable			
	402	0887	SS	1500 Ohms	100E-12 F	5 N/R	6 FAILED
							6000 N/R
							68 252 13
SPF1303	MOT	2	Transistor, Field Effect, MOS, N-Channel	Not Applicable			
	393	1183	SS	1500 Ohms	100E-12 F	1 N/R	1 FAILED
							2500 N/R
							102 252 13
T1551	N/R	2	Diode, Small Signal, General Purpose	Not Applicable			
	048	N/R	SS	100 Ohms	218E-12 F	1 N/R	1 FAILED
							450 N/R
							14 252 23
UTR541UR	UNI	2	Diode, Rectifier, Fast Recovery	Not Applicable			
	392	0886	SS	1500 Ohms	100E-12 F	1 N/R	2 PASSED
							2750 A-C (+ -)
							2750 C-A THEN A-C
							19 252 13
VN4000A	SIX	1	Transistor, Field Effect, MOS, N-Channel	Not Applicable			
	396	0582	SS	1500 Ohms	150E-12 F	1 N/R	3 FAILED
							500 G-S AND G-D (+ -)
							102 252 13
VP0109N2	SUP	1	Transistor, Field Effect, Junction, P-Channel	Not Applicable			
	396	0282	SS	1500 Ohms	150E-12 F	1 N/R	3 FAILED
							100 G-S AND G-D (+ -)
							102 252 13

RAC ESD Database

SECTION 3.3

PASSIVE COMPONENT SUSCEPTIBILITY TEST DATA

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[illegible]

RAC ESD Database

Part Number	Part ESD		Part Description	Technology	
	Mfr	Class		Failure Criteria	Test Remarks
0181A00371	BEC	3	Passive, Resistor	Not Applicable	
072	0779	GN	1500 Ohms	100E-12 F	10 N/R
					1 PASSED
					1 PASSED
073	0779	GN	1500 Ohms	100E-12 F	10 N/R
					1 PASSED
					1 PASSED
071	0779	GN	1500 Ohms	100E-12 F	10 N/R
					1 FAILED
					1 FAILED
072	0779	GN	1500 Ohms	100E-12 F	10 N/R
					1 PASSED
					1 PASSED
073	0779	GN	1500 Ohms	100E-12 F	10 N/R
					1 PASSED
					1 PASSED
026	0281	SS	100 Ohms	200E-12 F	1 N/R
					12 FAILED
					665 N/R
392	1286	SS	1500 Ohms	100E-12 F	1 N/R
					5 PASSED
					2750 EACH PIN TO CASE (+ -)
415	0781	SS	1500 Ohms	100E-12 F	23 N/R
					5 FAILED
					4500 ACROSS THE RESISTOR

RAC ESD Database

Part Number	Part ESD		Part Description	Technology									
	Mfr	Class		Not Applicable									
CMF-50	DAL	3	Passive, Resistor, Film, Thick	Test Source	Test Date	Test Type	Resistance	Capacitance	Test Pulses	Number Code	Date Devices	Test Result	Voltage Pin Combination
				415	0781	SS	1500 Ohms	100E-12 F	23	N/R	5	FAILED	4500 ACROSS THE RESISTOR
												102	33
												28	28
CMF-55	DAL	3	Passive, Resistor, Film, Thick	Not Applicable									
				415	0781	SS	1500 Ohms	100E-12 F	80	N/R	5	PASSED	16000 ACROSS THE RESISTOR
												102	11
												28	28
CMF-60	DAL	3	Passive, Resistor, Film, Thick	Not Applicable									
				415	0781	SS	1500 Ohms	100E-12 F	80	N/R	5	PASSED	16000 ACROSS THE RESISTOR
												102	35
												28	28
CMF-65	DAL	N	Passive, Resistor, Film, Thick	Not Applicable									
				415	0781	SS	1500 Ohms	100E-12 F	23	N/R	5	FAILED	4500 ACROSS THE RESISTOR
												102	70
												28	28
EMF-50-100	DAL	3	Passive, Resistor, Film, Thick	Not Applicable									
				415	0781	SS	1500 Ohms	100E-12 F	80	N/R	5	PASSED	16000 ACROSS THE RESISTOR
												102	42
												28	28
EMF-55-100	DAL	1	Passive, Resistor, Film, Thick	Not Applicable									
				415	0781	SS	1500 Ohms	100E-12 F	80	N/R	5	PASSED	16000 ACROSS THE RESISTOR
												21	9
												28	28

RAC ESD Database

Part Number (Cont'd)	Part	ESD	Description				Technology			
			Mfr	Class	Test	Test	Test	Test	Test	Test
EMF-55-100	DAL	1	Passive, Resistor, Film, Thick							Not Applicable
	Test	Test	Test	Test	Test	Test	Test	Test	Test	General
	Source	Date	Type	Resistance	Capacitance	Pulses	Date	Number	Devices	Pin Combination
	415	0781	SS	1500 Ohms	100E-12 F	23	N/R	5	FAILED	4500 ACROSS THE RESISTOR
	415	0781	SS	1500 Ohms	100E-12 F	8	N/R	5	FAILED	1500 ACROSS THE RESISTOR
EMF-60-100	DAL	3	Passive, Resistor, Film, Thick							Not Applicable
	415	0781	SS	1500 Ohms	100E-12 F	80	N/R	5	PASSED	16000 ACROSS THE RESISTOR
	415	0781	SS	1500 Ohms	100E-12 F	23	N/R	5	FAILED	4500 ACROSS THE RESISTOR
								5	FAILED	4500 ACROSS THE RESISTOR
EMF-65-1	DAL	1	Passive, Resistor, Film, Thick							Not Applicable
	415	0781	SS	1500 Ohms	100E-12 F	80	N/R	5	PASSED	16000 ACROSS THE RESISTOR
	415	0781	SS	1500 Ohms	100E-12 F	50	N/R	5	FAILED	10000 ACROSS THE RESISTOR
	415	0781	SS	1500 Ohms	100E-12 F	8	N/R	5	FAILED	1500 ACROSS THE RESISTOR
ERC-50	DAL	1	Passive, Resistor, Film, Thick							Not Applicable
	415	0781	SS	1500 Ohms	100E-12 F	80	N/R	5	PASSED	16000 ACROSS THE RESISTOR
	415	0781	SS	1500 Ohms	100E-12 F	8	N/R	5	FAILED	1500 ACROSS THE RESISTOR
	415	0781	SS	1500 Ohms	100E-12 F	23	N/R	5	FAILED	4500 ACROSS THE RESISTOR
ERC-55	DAL	3	Passive, Resistor, Film, Thick							Not Applicable
	415	0781	SS	1500 Ohms	100E-12 F	80	N/R	5	PASSED	16000 ACROSS THE RESISTOR

RAC ESD Database

Part Number (Cont'd)	Part ESD		Part Description	Technology									
	Mfr	Class		Not Applicable									
ERC-55	DAL	3	Passive, Resistor, Film, Thick	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test
				Source Date	Type	Resistance	Capacitance	Pulses	Code	Devices	Result	Voltage	Pin Combination
ERL-05	DAL	3	Passive, Resistor, Film, Thick	415	0781	SS	1500 Ohms	100E-12 F	23	N/R	5	FAILED	4500 ACROSS THE RESISTOR
				415	0781	SS	1500 Ohms	100E-12 F	50	N/R	5	FAILED	10000 ACROSS THE RESISTOR
ERL-07	DAL	1	Passive, Resistor, Film, Thick	415	0781	SS	1500 Ohms	100E-12 F	80	N/R	5	PASSED	16000 ACROSS THE RESISTOR
				415	0781	SS	1500 Ohms	100E-12 F	23	N/R	5	FAILED	4500 ACROSS THE RESISTOR
ERL-20	DAL	3	Passive, Resistor, Film, Thick	415	0781	SS	1500 Ohms	100E-12 F	8	N/R	5	FAILED	1500 ACROSS THE RESISTOR
				415	0781	SS	1500 Ohms	100E-12 F	50	N/R	5	PASSED	16000 ACROSS THE RESISTOR
HC210S-2R	HYC	N	Passive, Resistor, Film, Metal	415	0781	SS	1500 Ohms	100E-12 F	50	N/R	5	FAILED	10000 ACROSS THE RESISTOR
				415	0781	SS	1500 Ohms	100E-12 F	80	N/R	5	PASSED	16000 ACROSS THE RESISTOR
387	0182	GN	1000 Ohms	200E-12 F	10	N/R	3	PASSED	1000	INPUT(+)	TO COMMON		

Not Applicable

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RAC ESD Database

Part Number	Part ESD		Part Description		Technology										
	Mfr Class	Class	Description		Not Applicable										
MF-1/4	DAL	N	Passive, Resistor, Film, Thick												
	Test Source	Test Date	Test Type	Test Resistance	Test Capacitance	Test Pulses	Number Code	Date Devices	Test Result	Test Voltage	Test Pin	Test Combination	Failure Criteria	Test Remarks	General Remarks
	415	0781	SS	1500 Ohms	100E-12 F	80	N/R	5	PASSED	16000	ACROSS	THE RESISTOR	102	67	28
MF-1/8	DAL	3	Passive, Resistor, Film, Thick												
	415	0781	SS	1500 Ohms	100E-12 F	23	N/R	5	FAILED	4500	ACROSS	THE RESISTOR	102	36	28
								5	FAILED	4500	ACROSS	THE RESISTOR	102	47	28
MF-50	DAL	3	Passive, Resistor, Film, Thick												
	415	0781	SS	1500 Ohms	100E-12 F	50	N/R	5	FAILED	10000	ACROSS	THE RESISTOR	102	14	28
								5	FAILED	10000	ACROSS	THE RESISTOR	102	53	28
PTF-55	DAL	1	Passive, Resistor, Film, Thick												
	415	0781	SS	1500 Ohms	100E-12 F	80	N/R	5	PASSED	16000	ACROSS	THE RESISTOR	102	61	28
	415	0781	SS	1500 Ohms	100E-12 F	23	N/R	5	FAILED	4500	ACROSS	THE RESISTOR	102	16	28
	415	0781	SS	1500 Ohms	100E-12 F	8	N/R	5	FAILED	1500	ACROSS	THE RESISTOR	102	61	28
	415	0781	SS	1500 Ohms	100E-12 F	80	N/R	5	PASSED	16000	ACROSS	THE RESISTOR	102	61	28
	415	0781	SS	1500 Ohms	100E-12 F	23	N/R	5	FAILED	4500	ACROSS	THE RESISTOR	102	16	28
	415	0781	SS	1500 Ohms	100E-12 F	8	N/R	5	FAILED	1500	ACROSS	THE RESISTOR	102	34	28
PTF-60	DAL	1	Passive, Resistor, Film, Thick												
	415	0781	SS	1500 Ohms	100E-12 F	80	N/R	5	PASSED	16000	ACROSS	THE RESISTOR	102	66	28

RAC ESD Database

Part Number (Cont'd)	Part ESD		Part Description												Technology		
	Mfr	Class	Test	Test	Resistance	Capacitance	Pulses	Date	Code	Number	Test	Test	Test	Test	Test	General	
PTF-60	DAL	1	Passive, Resistor, Film, Thick														Not Applicable
	Test	Test	Test	Test	1500 Ohms	100E-12 F	50	N/R	5	FAILED	10000	ACROSS THE RESISTOR	102	38	28		
	415	0781	SS	1500 Ohms	100E-12 F	8	N/R	5	FAILED	1500	ACROSS THE RESISTOR	102	45	28			
RBR56L27400	ULT	3	Passive, Resistor, Film, Thin														Not Applicable
	436	1186	SS	1500 Ohms	100E-12 F	18	N/R	1	PASSED	4000	N/R	5	252	3			
RBR56L32401	ULT	3	Passive, Resistor, Film, Thin														Not Applicable
	436	1186	SS	1500 Ohms	100E-12 F	18	N/R	2	PASSED	4000	N/R	5	252	3			
RLR07C1003FS	TRW	3	Passive, Resistor														Not Applicable
	436	1186	SS	1500 Ohms	100E-12 F	18	N/R	36	PASSED	4000	N/R	5	252	3			
RN50H1692	N/R	1	Passive, Resistor														Not Applicable
	074	N/R	SS	0	Ohms	200E-12 F	1	N/R	1	FAILED	200	N/R	40	252	13		
	075	N/R	SS	1000 Ohms	200E-12 F	1	N/R	1	PASSED	1000	N/R	40	252	13			
								1	PASSED	1000	N/R	40	252	13			
	078	N/R	SS	1000 Ohms	200E-12 F	1	N/R	1	PASSED	1000	N/R	40	252	13			
								1	FAILED	1000	N/R	40	252	13			
								2	FAILED	1000	N/R	40	252	13			
	081	N/R	SS	1000 Ohms	200E-12 F	1	N/R	1	FAILED	2000	N/R	40	252	13			
	082	N/R	GN	1000 Ohms	200E-12 F	1	N/R	1	FAILED	4000	N/R	40	252	13			

RAC ESD Database

Part Number (Cont'd)	Part ESD		Part		Test										Technology		
	Mfr	Class	Description	Test	Resistance	Capacitance	Pulses	Date	Number	Test	Result	Voltage	Pin	Combination	Failure Criteria	Test Remarks	General Remarks
RN50H1692	N/R	1	Passive, Resistor		1000 Ohms	200E-12 F	1	N/R	1	FAILED	1100	N/R			40	252	13
RN50H4532	N/R	1	Passive, Resistor												Not Applicable		
	076	N/R	SS	1000 Ohms	200E-12 F		1	N/R	1	PASSED	2000	N/R			40	252	13
	077	N/R	SS	1000 Ohms	200E-12 F		1	N/R	1	PASSED	2500	N/R			40	252	13
	078	N/R	SS	1000 Ohms	200E-12 F		1	N/R	1	FAILED	1000	N/R			40	252	13
	079	N/R	SS	1000 Ohms	200E-12 F		1	N/R	1	PASSED	2000	N/R			40	252	13
	080	N/R	SS	1000 Ohms	200E-12 F		1	N/R	1	FAILED	1500	N/R			40	252	13
	083	N/R	SS	0	Ohms	200E-12 F	1	N/R	1	FAILED	2000	N/R			40	252	13
RNC55H	DAL	N	Passive, Resistor												Not Applicable		
	026	0281	SS	100	Ohms	200E-12 F	1	N/R	4	FAILED	3000	N/R			106	285	13
RNC55H1183fs	T&W	3	Passive, Resistor												Not Applicable		
	436	1186	SS	1500	Ohms	100E-12 F	18	N/R	3	PASSED	4000	N/R			5	252	3
RNC55H3322	N/R	1	Passive, Resistor												Not Applicable		
	079	N/R	SS	1000	Ohms	200E-12 F	1	N/R	1	PASSED	2000	N/R			40	252	13
	084	N/R	SS	1000	Ohms	200E-12 F	1	N/R	1	FAILED	3500	N/R			40	252	13

Part Number (Cont'd)	Part ESD		Part		Technology									
	Mfr	Class	Description		Not Applicable									
RNC55H3322	N/R	1	Passive, Resistor											
	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	General
	Source	Date	Type	Resistance	Capacitance	Pulses	Code	Devices	Voltage	Pin	Combination	Criteria	Remarks	Remarks
084	N/R	SS	1000 Ohms	200E-12 F	1	N/R	1	PASSED	4000	N/R	40	252	13	
							2	FAILED	1000	N/R	40	252	13	
							1	FAILED	3000	N/R	40	252	13	
RNC55H68	N/R	N	Passive, Resistor											Not Applicable
086	N/R	SS	1000 Ohms	200E-12 F	1	N/R	3	FAILED	15000	N/R	40	252	13	
RNC90Y178R00	ULT	3	Passive, Resistor											Not Applicable
436	1186	SS	1500 Ohms	100E-12 F	18	N/R	5	PASSED	4000	N/R	5	252	3	
RNC90Y187R00	ULT	3	Passive, Resistor											Not Applicable
436	1186	SS	1500 Ohms	100E-12 F	18	N/R	5	PASSED	4000	N/R	5	252	3	
RNC90Y196R00	ULT	3	Passive, Resistor											Not Applicable
436	1186	SS	1500 Ohms	100E-12 F	18	N/R	5	PASSED	4000	N/R	5	252	3	
RNC90Y205R00	ULT	3	Passive, Resistor											Not Applicable
436	1186	SS	1500 Ohms	100E-12 F	18	N/R	5	PASSED	4000	N/R	5	252	3	
RNC90Y20R0008R	ULT	3	Passive, Resistor											Not Applicable
436	1186	SS	1500 Ohms	100E-12 F	18	N/R	3	PASSED	4000	N/R	5	252	3	

RAC ESD Database

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Part Number	Part ESD		Part Description	Technology														
	Mfr	Class		Test Date	Test Type	Resistance	Capacitance	Test Pulses	Number Code	Date Devices	Test Result	Test Voltage	Pin Combination	Failure Criteria	Test Remarks	General Remarks		
RNC90Y215R00	ULT	3	Passive, Resistor	436	1186	SS	1500 Ohms	100E-12 F	18 N/R	5	PASSED	4000 N/R	5	252	3			
				Not Applicable														
RNC90Y22600	ULT	3	Passive, Resistor	436	1186	SS	1500 Ohms	100E-12 F	18 N/R	5	PASSED	4000 N/R	5	252	3			
				Not Applicable														
RNC90Y226R000	ULT	3	Passive, Resistor	436	1186	SS	1500 Ohms	100E-12 F	18 N/R	5	PASSED	4000 N/R	5	252	3			
				Not Applicable														
RNC90Y3K0100	VIS	3	Passive, Resistor	436	1186	SS	1500 Ohms	100E-12 F	18 N/R	2	PASSED	4000 N/R	5	252	3			
				Not Applicable														

RAC ESD Database

SECTION 4.0

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SECTION 5.0

DATA SOURCES

5.0 DATA SOURCES

The following section contains brief descriptions of the various data sources used in this publication. They are presented in numerical order by source code which is found in field No. 6 in the detailed data of Section 3.0. Note that there may be a range of source codes associated with one data source if different test methods were used by that source.

- 001 Three Fairchild 2102LI ICs were tested using the standard human body model. The voltage was applied to each input with the positive voltage on the input and the negative on V_{SS} or V_{DD} . Pulsing started at 200 volts and incremented in 100-volt steps until failure occurred. Three pulses were given at each voltage. Out of a total of 39 inputs tested, 7 were damaged at 300 volts, 22 at 400 volts, 9 at 500 volts and 1 at 600 volts.
- 002 Type 6514 Static RAMs from RCA and Monolithic Memories were the devices tested. The inputs were step-stressed until failure in both polarities. A positive potential at the input was found to be the more destructive condition.
- 003 Devices of various technologies were stressed using a 100 pF and 0 ohm model. The inputs were step-stressed with one supply lead grounded. The voltage was increased in 100-volt steps until failure.
- 004 MOS, STTL, and TTL devices were stressed using 125 pF capacitance and 0 resistance. The inputs were stressed with no other pins grounded (i.e., floating device model). In this situation, it is the capacitance of the device itself which allows energy to be dissipated causing device damage.
- 005 A sampling of digital to analog converters from 6 different manufacturers were tested. Step-stress comparative testing was done using the standard human body model. A change in any electrical parameter of 10% or more was considered a failure. The following devices were tested:

005 (Cont'd)

Analog Devices	AD 7533
Micro Power Systems	AD 7520
Analog Devices	AD 7520
Intersil	AD 7520
Hybrid Systems	DAC 331
Raytheon	AD 7521
National	AD 7521

006 Various CMOS devices were tested using the standard human body model. A sample of four devices were step-stressed on a different pin combination for every voltage. The pin combinations used were:

<u>(+)</u>	<u>(-)</u>
V _{DD}	Input
Input	V _{SS}
Input	Associated Output
Associated Output	Input

The voltage stepping increments were 200 volts starting at 400 volts. An out-of-spec current leakage was used as the failure criterion.

007-013 Various CMOS devices from two different manufacturers were tested in accordance with the applicable MIL-M-38510 slash sheet. This requires the device to withstand a stressing voltage of 400 volts. To obtain comparative data on the devices, a sample of 5 devices were also tested at 200, 400, and 600 volts with each device subjected to only one voltage.

014-025 (Published paper, Ref. 10)

Various technologies (CMOS, TTL, STTL, LSTTL, ECL, transistors, diodes) were tested to determine the relative failure voltages. Each technology was tested using the human body model with various resistances and capacitances (100 to 10K ohm and 100 to 500 pF, respectively). Specific part numbers are not known.

026 These tests were performed with an "in-house"-built VZAP tester utilizing a 200 pF capacitor and a 100 ohm resistor. Average failure voltages for a sampling of 4 devices was given using step-stressing.

027 Tests were conducted on various bipolar devices, both digital and linear, using an Electro-tech Systems (ETS)-900 ESD tester (100 pF, 1500 ohm). A sample of 15 of each device type was tested at 1000 volts. The failure criterion was an out-of-spec DC parameter.

028 (Publisher paper, Ref. 8)

Various semiconductor devices were step-stressed with a circuit similar to the MIL-M-38510 slash sheet spec (117 pF, 1500 ohm). Step voltages of 250, 500, 1000, 1500 and 2500 volts were used with 30 pulses applied at each voltage. A DC parameter change of 10% or more was used as the failure criterion. Devices were also stressed at 75% of the threshold and then burned in to detect possible ESD-induced latent failures. (The 75% pulsing data is not included in the detailed data section of this book).

029 (Published report, Ref. 11)

The data in the detailed data section under the 029 source code was theoretically derived from data contained in the SUPERSAP2 database, which contains parametric data on many electronic devices including diodes, transistors, and microcircuits. The parameters are derived theoretically and empirically from EMP test data.

030 This document contains worst-case failure voltages for many different microcircuits, diodes and transistors referenced to the 100 pF, 1500 ohm human body model. Details of the test procedure was not known.

031-047 This document contains a study to evaluate various NMOS and CMOS devices from various manufacturers for their ESD susceptibility. Various resistances and capacitances were used in the discharge circuit. Devices which were step-stressed (source codes 042-045) were stepped from 400 volts in 100-volt increments. Multiple pulsing was also carried out. For devices that were step-stressed (source code 045) four pulses were applied at each voltage. Multiple pulsing was also carried out at discrete voltages of 1000 volts (source code 046) or 500 volts (source code 047) until failure occurred. One input of the devices was stressed to V_{SS} , V_{PP} or V_{DD} in both polarities.

048 (Published paper, Ref. 15)

In this paper, several bipolar transistors, diodes, and JFETs were stressed with a 218 pF, 100 ohm discharge model. All devices were step-stressed with the stressing voltage increasing by 20% with every pulse. The starting voltages for MOS devices was 16 volts and for all others 70 volts. The maximum stressing voltage was 3000 volts.

049-060 ESD susceptibility testing was conducted on various transistors and ICs. Comparative data is given on the 741 op amp from three different manufacturers. Two advanced Schottky parts were also tested (the 74F00 and 74F04). For devices which were step-stressed the source code and associated step levels are as follows:

051	4000, 10000
052	50, 100, 200, 300, 400, 500, 600
053	500, 1000, 1500
054	1000, 2000

061-066 Tests were carried out on the following NMOS 16K dynamic RAMs:

TI	4116
NEC	416
Mostek	4116
Intel	(Part number not reported)

061-066 (Cont'd)

The source codes and associated voltage step levels for devices which were step-stressed are as follows:

061	500, 1000
063	200, 400, 600, 800, 1000

Two different resistances were used and multiple pulse testing was conducted.

067-070 This document presents data on an STTL device (74S00) and a TTL device (7437). The voltages given are those required to cause 30% of the devices to fail. The inputs of the devices were tested using four different capacitances and no resistance. Findings indicate, on the average, the energy required to cause failure in the Schottky device is 25% that of the standard TTL device.

071-073 Resistance networks were tested for resistance change after stressing a sample of devices at either 170, 2000 or 15,000 volts using the standard human body model. A change in resistance of 2% was used as the failure criterion. Various resistance values were stressed with up to 10 pulses or until failure.

074-086 RNC 50 type 0.1% resistors in various resistance values were tested for their ESD susceptibility. Devices were stressed with a 200 pF, 1000 ohm human body model (except for devices with source code 074 and 083 which used no resistance in the test circuit). For devices which were step-stressed, the source code and associated stressing voltages are as follows:

074	50, 100, 200
075	300, 400, 500, 600, 700, 800, 900, 1000
076	1000, 1500, 2000
077	500, 800, 1000, 1200, 1500, 2000, 2500
078	500, 1000
079	500, 1000, 1500, 2000
080	500, 1000, 1500

074-086 (Cont'd)

081	2000, 3000, 4000, 5000
083	500, 1000, 1500, 2000, 2500, 3000, 3500, 4000
085	100, 200, 325, 400, 500, 1100
086	1000, 1500, 2000, 2500, 3000, 4000, 4500, 5000, 6000, 8000, 10000, 15000

A change in resistance of 0.1% was used as the failure criterion.

087-126 (Published paper, Ref. 4)

This report documents an extensive study by Hewlett Packard on the effects of ESD on various CMOS devices and investigates the possibility of ESD-induced latent failures. The data associated with these source codes were obtained primarily from Weibull plots, i.e., the voltages which would cause 10%, 50% and 90% of the devices to fail are given as cumulative failures. Since the sample size was known (25 for each device), the approximate number failing at each specified voltage can be calculated via the following formula:

$$\frac{i - .3}{N + .4} = \% \text{ failed } (+ 100)$$

where

i = number failed

N = sample size

Therefore, at the 10% voltage approximately 3 devices failed, at 50% 10 more devices failed and at 90% 10 more, with approximately 2 devices passing the test at the 90% voltage.

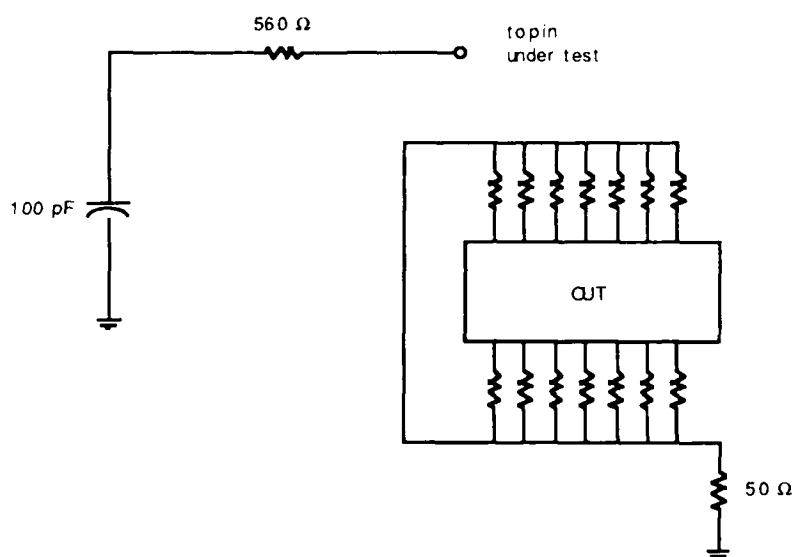
Multiple pulsing was also carried out at a single test voltage (indicated by a GN under test type) on the Motorola 14049. The voltages chosen were 700, 900, 1100, 4500, 6000 and 7000, and the number of pulses were incremented until device failure (source codes 098-103).

- 127 Three LSTTL devices (74LS09, 74LS175 and 74LS240) from various manufacturers were tested for their ESD susceptibility. The inputs were step-stressed in 200-volt increments starting at 400 volts with one pulse at each voltage. The procedure was repeated with 10 pulses at each voltage on another sampling of devices. It was noted that 90% of the failures exhibited input diode short circuits.
- 128 Two low-power Schottky devices (the 54LS151 from two different manufacturers and the 54LS153) and one Schottky TTL device (54S157) were tested. All inputs on all devices were step-stressed to failure with five pulses at each voltage. The voltage increments were 100 volts starting at 400 volts. The failure voltage specified is an average of all inputs of that device (with the most susceptible given in the Remarks section).
- 129-139 Various MOS microprocessors were tested, the Mostek 3870 and 4116, the NEC D416C, and the Hitachi 4716AP. For the Mostek 3870, a sample of 5 devices were tested at 1000 and 2000 volts and 4 devices were tested at 3500V. For the other parts tested, a sample of 5 were tested at 500, 700, 800, 1000, and 1500 volts until all 5 parts failed.
- 140 A sample of 40 MK3873s was tested at 300 volts with up to 3 pulses, and the survivor (only 1) was tested at 1000 volts.
- 141-155 (Published paper, Ref. 17)

This extensive study evaluates the input protection on CMOS devices using various resistances and capacitances on the 4001A (source codes 143-154).

Also, the 4011 from four different manufacturers was step-stressed on twelve different pin combinations. The failure voltage is given for each manufacturer and each pin combination.

Testing was performed on various CMOS devices, the 4021A, 4021B, 4081B, 4011A and 4013A. To more closely approximate typical resistances seen by the device under test in actual circuit operation, the tests were carried out with a resistance (20K to 5M ohms) to ground. The schematic for the discharge circuit is as follows:



The pin under test was connected directly to the 560 ohm resistor. The supply pins were connected directly to the 50 ohm resistor to ground.

For each pin and polarity of the 4021A, two devices were stressed at 500, 1000, and 1500 volts (source codes 156-159).

After pulsing, the 4021A devices were put on life test at 150°C for 308 hours. Subsequent step-stress testing was performed up to 5500 volts (4021A data with source code 160).

The 4021B was step-stressed to 4000 volts to compare with the 4021A data.

The 4081B was step-stressed to 4500 volts and the 4011A and 4013A were stepped to 4000 volts.

165 Several CMOS ICs were subjected to ESD pulses and latch-up tests. The devices were stressed at 400 volts (in accordance with the MIL-M-38510 slash sheet specification) in the following sequence:

Input (-)	V_{DD} (+)
Input (+)	V_{SS} (-)
Input (+)	Output (-)
Input (-)	Output (+)

166-169 A 40-pin LSI PMOS device was subjected to discharges of 4000, 7000 and 10,000 volts using the standard human body model. The device was stressed in the following four pulse sequence:

Inputs (-)	V_{DD} (+)
Inputs (+)	V_{SS} (-)
Inputs (+)	Outputs (-)
Inputs (-)	Outputs (+)

The device had previously passed testing to 3000 volts.

170-230 (Published paper, Ref. 26)

This report documents extensive testing on the 74F04 and the 74F175 advanced Schottky TTL devices. The testing was done in three basic parts:

- (1) Classification testing in accordance with MIL-STD-1686A, Appendix B
- (2) Step-stress testing
- (3) Multiple pulse testing

All parts of these tests were performed with the standard human body model (100 pF, 1500 ohm) and carried out by three independent test labs.

170-230 (Cont'd)

The step-stress testing was carried out in 100-volt increments from 100 to 1000 volts and 400-volt increments from 1000 to 5000 volts. One device was step-stressed on one pin (by each test lab) with all other pins tied together (APTT). This test was done in two conditions: (1) with all pins tied together grounded and (2) with all pins tied together floating (this condition is noted as such in Remarks).

Multiple pulse testing was also done in the two conditions mentioned above where a device was stressed at only one voltage by applying numerous pulses until failure. The devices were checked after 10, 30, 100, and 300 pulses.

231 A custom LSI phone converter IC was tested for its ESD susceptibility. The inputs of the device were tested by bringing a probe 1.5 feet long up to the pin for discharge. No resistance was used in the circuit.

232 (Published paper, Ref. 34)

This document contains the damage constant (K_1) and breakdown voltage V_D for many diodes and transistors. The Wunsch model was used ($P = Kt^{-.5}$) and the failure voltage calculated as in source code 029. A bulk resistance of 30 ohm was assumed for the calculations.

233 (See source codes 156-164)

234-243 (Published paper, Ref. 19)

TTL devices 74H106, 74163, 74LS163, and 74173 were tested for their ESD susceptibility. The inputs of the devices were step-stressed with various capacitances (and no series resistance). The stepping increments were 100 volts starting at 100 volts. The charged capacitor was touched to the input of the device so that an arc discharge occurred. A curve tracer was used to detect failure.

244-245 (Published report, Ref. 20)

This document contains two types of test data: (1) ESD susceptibility using a 100 pF, 1500 ohm model (source code 244), and (2) system transient data using a 0.1 pF, 100 ohm model (source code 245). For the ESD susceptibility data, the devices were step-stressed to a maximum of 1000 volts. For the system transient data, the devices were step-stressed to a maximum of 300 volts and the failure voltage given is the average from 15 devices.

246-379 (Published paper, Ref. 13)

This report documents an extensive program undertaken by Westinghouse to study ESD-induced latent failures of various types of semiconductor devices. The study was conducted in two parts: (1) Latent Failure Study I, which studied the 2N4416, 3N170, 1N5711, CD4001A, 5404 and the 54S04, and (2) Latent Failure Study II, which studied in more detail the 3N128 and the 54L04. Both studies provided very detailed ESD susceptibility data on the parts, giving both single pulse and multiple pulse data. All testing was done with the standard human body model (100 pF, 1500 ohm).

380-382 (Published paper, Ref. 21)

This paper documents a study in which 16K NMOS EPROMs manufactured in both the United States and Japan were tested for their ESD susceptibility to various discharge models. Two human body models were used, the 100 pF, 1500 ohm model and a 200 pF, 0 ohm model. For each of the human body models used, a separate device from each vendor was step-stressed from 200 to 3000 volts in twelve steps. 1, 5, and 10 pulses were applied to each pin in both polarities.

Testing was also done on some parts using the charged device model. The devices tested using this model are noted in the Remarks section. The generic part number of these devices were not reported.

383 (Published paper, Ref. 22)

Various ICs of several technologies were tested using a square wave step-stress test (EMP test) at pulse widths of 100 ns, 1 μ s, and 10 μ s. From these tests, the damage constants K_1 and K_2 and the breakdown voltage V_D and bulk resistance R_B were calculated. Knowing these parameters, a theoretical ESD failure voltage was calculated.

384-385 (Published paper, Ref. 35)

Various ICs of several technologies (LSTTL, TTL, STTL, CMOS (B series), CMOS LSI, NMOS) were step-stressed using a 200 pF, 1000 ohm human body model. Steps were in increments of 100 volts from 100 to 5500 volts until failure. One pulse per pin was applied at each voltage.

386 (Published report, Ref. 23)

Various LEDs were tested with various pulse widths ranging from a few hundred nanoseconds to 100 μ s. The damage constants were calculated and converted to an ESD level. A degraded light output was observed to be the most sensitive parameter and was used as the failure criterion along with a change in the I-V characteristics. This study was based on work outlined in Ref. 24.

387-388 A resistor network device was tested using 1000 and 10000 volt levels. Three devices were subjected to each voltage level using a 1000 ohm resistance and 200 pF capacitance. Five pulses were given per each polarity. An in-house built tester was used during this go/no go test. The failure criterion was a resistor network out-of-specification.

390 (Published paper, Ref. 38)

This version of the QPL added an Electrostatic Discharge Sensitivity Classification in accordance with MIL-STD-883C, Method 3015.2. Devices that pass the 2000V testing are given a (B) classification. Devices that did not pass are given an (A) classification. 1500 ohms and 100 pF are used for testing.

391 During August, 1986, ESD Susceptibility Testing using an ETS-910 tester, accordance with the DoD-STD-1686 Human Body test method (1500 ohm and 100 pF). Of the commercial high speed CMOS tested using the average failed voltage of 30 devices was 2700 volts. The testing started at 1800 volt and increasing in 25 volt increments.

392 An in-house test was performed with an IMCS-3000 tester in accordance with MIL-STD-883 method 3015.2, and using a 1500 ohm 100 pF human body model. The voltage levels were step stressed at 50, 200, 750, 1000 and 2750 volts. Samples of integrated circuits and discrete semiconductors from various manufacturers were stressed. The failure criterion was a 10% or greater change measured on any electrical parameter.

393 An IMCS-2400B model tester using 1500 ohm resistance and 100 pF capacitance was used to step stress devices starting at 500 volts, with 500 volt increments to 5000 volts or failure. A variety of technologies were tested including CMOS, NMOS, ASTTL, and bipolar transistors from a variety of manufacturers.

394 An IMCS-3000 model tester using 1500 ohm resistance and 100 pF capacitance was used to step stress devices starting at 100 volts, with 100 volt increments to 4000 volts or failure. A group of diodes from various manufacturers was tested.

395 (Published report, Ref. 39)

A Government Industrial Data Exchange Program (GIDEP) report No. F9-A-86-04 was released August 1986, in which a power rectifier from Unitrode Corporation was tested using an ETS-910 susceptibility tester. The Human Body (1500 ohm and 100 pF) model was used to step stress in increments of 100, 200, 500, 750, 1000, 2000 and 5000 volt levels.

396 (Published report, Ref. 40)

This data was published in a Rome Air Development Center (RADC), Technical Report, No. RADC-TR-84-129. Various manufacturers' VMOS Power Field Effect Transistors were subjected to an ESD susceptibility test using an in-house 1500 ohm 150 pF tester. 6 lots of 5 components each were tested in 100 volt increments starting at 500 volts until 3 out of 5 devices failed.

397 Military high speed CMOS devices from 4 manufacturers were tested using the MIL-STD-883 Method 3015, 1500 ohm and 100 pF model. The voltage levels used in the step stress started at 500 volts, with 500 volt increments to 9000 volts or failure. Reported failure voltages were based on an average sample size of 10 per pin combinations.

398 An in-house test was performed using the MIL-STD-883 Method 3015.2, 1500 ohms resistance and 100 pF capacitance test method. The voltage test was a go/no go 2000 volt test with 5 pulses per polarity. Neither the manufacturer nor model no. of the tester were reported. Optoelectronic coupler JANTXV 4N24 was tested using 3 samples to determine that it was not susceptible to static discharge.

399 Commercial high speed CMOS devices from various manufacturers were tested, sample of sizes up to 15 devices were tested using a human body model (1500 ohm 100 pF model), go/no go, 2000 volt 5 pulses per polarity. The failure criteria was an increase in leakage current.

400 An IMCS-2500 model tester using MIL-STD-883C Method 3015.4, 1500 ohm, 100 pF step stress testing started from 100V, in 100 volt increments to failure or 17,500 volts. If the device passed, it was then stressed in an in-house-built tester to 43,000 volts or failure. One pulse was applied per voltage increment. The failure criteria was determined by a change in leakage current.

401 The model number of the IMCS tester was not reported. Testing of the EPROM's was per MIL-STD-883, Method 3015.4. The resistance was 1500 ohms and capacitance was 100 pF, voltage step stress levels were of 200 volt increments until failure with five pulses applied per voltage increments. The components tested were from different wafers and assembly lots.

402 An IMCS-3000 model tester using MIL-STD-883C Method 3015.4, 1500 ohm, 100 pF model was used for step stressing at 500, 1000, 2000, 4000, 8000 and 16000 volt increments with five pulses per polarity. All untested pins were tied together.

A variety of diodes, transistors and integrated circuits from various manufacturers were tested.

403 (Published paper, Ref. 41)

An IMCS-2500 model tester using MIL-STD-883 Method 3015.1 with 1500 ohms and 100 pF, step stressed test samples starting at 1000 volts to failure. Five pulses were applied per polarity per increment. The failure criteria was 10% change in electrical characteristics. Twenty (20) LED samples of nine (9) die types were tested. The results of the test showed that failure mechanisms of the LED's were similar to those of semiconductor devices: dielectric breakdown, junction punch-thru, and metallization melt. The degree of sensitivity depended on the construction of the LED's. Some of the LED's which showed significant early reverse breakdown voltage, will function properly in the forward direction.

- 404-411 During a DoD-STD-1686 in-house test, several discrete semiconductors from various manufacturers were tested using a 1500 ohm resistance and a 100 pF capacitance. Starting with a go/no go 1000 volt stress, if the component showed degradation after 10 pulses, additional components were then step stressed in 100 volt increments until failure. Information pertaining to the test apparatus manufacturer or model number was not supplied.
- 412 A MIL-STD-883 Method 3015.4 test was performed on transient surge suppressors using an IMCS-3000 1500 ohm, 100 pF model. The components were step stressed in 1000 volt increments to 15000 volts or failure. One pulse per polarity was applied during each increment of the step stress. Each pin was tested with respect to pin 1 with the failure criterion of a 10% change in leakage current.
- 413 (Published paper, Ref. 42)
- An IMCS-2400 tester using a MIL-STD-883 Method 3015, 1500 ohm, 100 pF capacitance model, step stressed at 50, 500, 2000, 6000, and 16000 voltage increments, five pulses per polarity per increment was applied to three types of microwave/RF transistors from one manufacturer.
- 414 CMOS components from four manufacturers were tested using the DoD-STD-1686 test method. A sample size of ten components each were subjected to a 1500 ohm 100 pF, 100 volt step stress starting at 500V until failure, five pulses per increment. The test results compared testing with all other pins open vs. all other pins grounded. All pins grounded showed a slightly lower failure voltage.
- 415 Several metal film resistors from one manufacturer were tested to DoD-STD-1686 using an in-house built 1500 ohm 100 pF model tester. A step stress was performed beginning at 500 volts with 100 volt increments up to 1000 volts, then 250 volts increments to 3000 volts, 500 volt increments up to 6000 volts, and finally 1000 volt increments to 16000 volts or until failure. The failure criterion was a change in resistor tolerance of 0.5%.

416 An in-house tester was used to test CMOS technology from various manufacturers in accordance with MIL-STD-883C Method 3015.2. A 1500 ohm, 100 pF model was used. Step stress voltages starting at 100 volts were increased in increments of 100 volts until failure occurred.

417 The same source as 416 above except the resistance was 0 and the capacitance was 200 pF. A catastrophic failure was the failure criterion.

418 (Published paper, Ref. 43)

An in-house tester was used to test op amps. This was done per MIL-STD-883 Method 3015 using a 1500 ohm, 125 pF step stress. 500, 750, 1000, 1250 and 5000 volt one pulse increments, were applied per polarity.

419 (Published paper, Ref. 43)

Same source as 418 above except the voltage steps were changed to 1250, 1500, 2000 and 3000 volts. Five pulses were applied per increment per polarity.

420 (Published paper, Ref. 43)

Same source as 418 above but resistance was changed to zero ohms, while the capacitance stayed at 125 pF. The voltage step stress started at 100 volts and increased in increments of 100 volts until failure.

421-422 Several types of technologies were tested using both the human body model and the zero ohm model. The HBM testing was in accordance with MIL-STD-883 Method 3015.2 using a 1500 ohm resistance and a 100 pF capacitance, and applying 200 volt increments to 5000 volts or failure. This test was performed on an ETS-910 tester. For the zero ohm model; the capacitance was set at 200 pF. The same step stress voltage increment were applied. Both tests applied one pulse per voltage increment per polarity.

423-424 (Published paper, Ref. 44)

Several VLSI devices were tested using a in-house built tester. This test compared the human body model (HBM) with charge device model (CDM). The HBM used 1500 ohm resistance and 100 pF capacitance per MIL-STD-883 Method 3015.1. The step stress voltages were in 250 volt increments until failure with one pulse applied per polarity per stress increment. The failure criterion was a 10% change in leakage current.

425 A Hartley Autozap 200 RD model tester using 1500 ohm resistance and 100 pF capacitance per MIL-STD-883 Method 3015.3 was used. Step stressing started at 100 volts increasing in increments of 100 volts to 1000 volts, then increasing in increments of 250 volts until failure. Five pulses were applied per increment per polarity. The testing involved CMOS and NMOS components with the reported failure voltages listed for each pin tested.

426-427 An IMCS-2400B model tester using 1500 ohm resistance, 100 pF capacitance MIL-STD-883 Method 3015.3 test method was used to evaluate fast TTL, LSTTL, STTL and TTL technologies. The step stress voltage increments were 500, 1000, 2000, 4000, 8000 and 16000 volts with five pulses applied per increment per polarity. The failure criterion was a change of greater than 5 μ amp in leakage current at 0.5 volts. The failure mechanisms were listed as input and clamping diode failures.

428 HMOS components were tested with an IMCS-2400 model tester using MIL-STD-883 Method 3015.3 (1500 ohm 100 pF capacitance). A go/no go 1200 volt pulse, 5 pulses per polarity was applied with all unused pins open.

429 The same as 428 above, but using a in-house standard of zero ohms, 50 pF capacitance, go/no go 600 volt pulse, 3 pulses per polarity, with all unused pins grounded.

- 430 The same source as 428. This time using a charge device model 10m ohms resistance, go/no go 1500 volt pulse, 3 pulses per polarity test with all unused pins open. The failure criterion for all three tests (428, 429, 430) were listed as a 25% change in leakage current or failed functionally.
- 431-435, An IMCS-2400 model tester using the MIL-STD-883 Method 3015.1 human body
and 437 model 1500 ohm resistance, 100 pF capacitance with 5 pulses applied per polarity per voltage increment, was used to test several types of technologies. For PROM devices the step stress was started at 800 volts increasing in 100 volt increments until failure. For linear comparators and op amps there were two types of tests: (1) was a go/no go 2000 volt and (2) a step from 500 volts increasing in 250 volts increments to failure. For bipolar devices the step stress started at 750 volts and increased in 250 volt increments until failure. For linear and digital components a go/no go 2000 volt test was performed.
- 436 An IMCS 2400 model tester using the DoD-STD-1686 human body model 1500 ohm resistance, 100 pF capacitance was used to step stress devices starting at 200 volts, increasing in 100 volt increments to 1000 volts, then increasing in 200 volt increments to 2000 volts, followed by 500 volt increments to 4000 volts or failure. Three pulses were applied per voltage increment per polarity. Both discrete semiconductors and integrated circuits from various manufacturers were tested.
- 438 Bipolar and CMOS device were tested by an IMCS-2400 model tester using MIL-STD-883 Method 3015.3 human body model with 1500 ohm resistance and 100 pF capacitance. Go/no go 2000 volts pulses were applied, 5 pulses per polarity. The failure criterion was out-of-electrical specification.

SECTION 6.0

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APPENDIX A

DERIVATION OF DATA CONVERSION FORMULAE

DERIVATION OF DATA CONVERSION FORMULAE

The derivation of two data conversion methodologies are presented here:

Part I Conversion of failure voltages using a nonstandard human body model to a theoretical failure voltage consistent with the standard model (100 pF, 1500 ohm).

This is only used for calculating a failure voltage consistent with the 100 pF, 1500 ohm model so that a classification can be derived in accordance with MIL-STD-1686A and MIL-HDBK-263.

Part II Conversion of empirical EMP overstress data to a theoretical ESD failure voltage.

Part I: Derivation of Nonstandard Human Body Model Test Data Conversion Formula

Since there is much data on parts using a discharge model other than the standard 100 pF, 1500 ohm, a method to convert the failure voltage to a level consistent with the 100 pF, 1500 ohm model for classification purposes is necessary. One way this can be accomplished is via a method similar to the EMP-to-ESD conversion method described in Part II of this appendix. However, for this method to work, one must know certain parameters of the device, namely the bulk resistance and breakdown voltage. Unfortunately, these parameters are seldom available, especially given the fact that for ICs the failure site is often not known.

A more direct conversion technique was therefore needed which could convert data without knowing these device parameters. Since the failure voltage of a device (the voltage on the capacitor) is proportional to the series resistance in the stressing circuits and inversely proportional to the capacitance in the circuit, the failure voltage, resistance, and capacitance can be approximately related as follows:

$$V = A \sqrt{\frac{R}{C}}$$

Here A is a constant dependent on the device parameters. Therefore, the ratio of failure voltages for two different RC models is in the general form:

$$\frac{V_1}{V_2} = \frac{A\sqrt{\frac{R_1}{C_1}}}{A\sqrt{\frac{R_2}{C_2}}} = \sqrt{\frac{R_1 C_2}{C_1 R_2}}$$

where:

- V_2 = observed failure voltage using C_2 and R_2
- C_2 = capacitance used in nonstandard model (in pF)
- R_2 = resistance used in nonstandard model (ohms)
- V_1 = converted failure voltage
- C_1 = capacitance of model failure voltage is to be converted to (in pF)
- R_1 = resistance of model failure voltage is to be converted to (ohms)

Therefore, when using 100 pF and 1500 ohm for C_1 and R_1 respectively, the following conversion equation is obtained:

$$V_1 = V_2 (3.87) \sqrt{\frac{C_2}{R_2}}$$

The relationship of V, C, and R was obtained through empirical methods (regression analysis) by reviewing data in which a device was tested with different C, R models and threshold voltages obtained for each model (Ref. 10, 14, 16, 17, 19, 25).

It must also be stressed that this relationship of V, C and R indicates an energy-dependent failure mechanism. This may not be an adequate assumption, if the failure mechanisms does not follow the Wunsch Bell Model (Ref. 28). Since the failure mechanism for a particular device is rarely known, this data conversion methodology is necessarily very approximate. Adding to this uncertainty is the fact that the failure mechanism characteristics can change with various RC values. For this reason this conversion was used to classify devices only in those cases where failure data from the 100pF, 1500 ohm model was not available.

This method is necessarily approximate and was used in the classification of devices only if data using the standard human body model was not available.

Part II: Derivation of EMP-to-ESD Conversion Formula

By knowing certain parameters of a device, a theoretical ESD failure voltage can be calculated. The parameters needed for conversion of EMP overstress failure to a theoretical ESD failure voltage are (Reference 25):

- R_B = Bulk resistance of the device
- V_D = Breakdown voltage of device
- K_1 = Failure constant 1
- K_2 = Failure constant 2

The basic equation used for this conversion is:

$$P_{AV} = K_1 t^{-K_2}$$

where:

- P_{AV} = average power required for failure
- t = pulse width
- p = $V_D i + R_B i^2$ (time dependent power)
- where i = time dependent current
- p = $V_D I_p e^{-\frac{t}{\tau}} + R_B I_p^2 e^{-\frac{t}{\tau}}$
- where τ = RC time constant of discharge

Integrating and averaging the power over 5 time constants yields:

$$P_{AV} = \frac{1}{5\tau} \int_0^{5\tau} V_D I_P e^{-\frac{t}{\tau}} dt + \frac{1}{5\tau} \int_0^{5\tau} R_B I_P^2 e^{-\frac{2t}{\tau}} dt$$

$$= \frac{V_D I_P}{5} (1 - e^{-5}) + \frac{R_B I_P^2}{10} (1 - e^{-10})$$

$$(e^{-5} \text{ and } e^{-10} \ll 1)$$

therefore:

$$P_{AV} = \frac{V_D I_P}{5} + \frac{R_B I_P^2}{10}$$

$$K_1 t^{-K_2} = \frac{V_D I_P}{5} + \frac{R_B I_P^2}{10}$$

Using the quadratic equation solution to solve for I_P :

$$I_P = \frac{-2V_D + \sqrt{4V_D^2 + 40R_B(K_1 t^{-K_2})}}{2R_B}$$

$$I_P = \frac{V - V_D}{R + R_B}$$

(general equation for I_P)

$$V = I_P (R + R_B) + V_D$$

(V = voltage on capacitor)

(R = source resistance of model)

Assuming $t = 5\tau = 5RC = 7.675 \times 10^{-7}$ for conversion to voltage level consistent with a 100 pF, 1500 ohm model and a nominal value of 30 ohms for R_B yields:

$$V = \left[\frac{-2V_D^2 + \sqrt{4V_D^2 + 1200 K_1 (7.675 \times 10^{-7})^{-K_2}}}{60} \right] 1530 + V_D$$

APPENDIX B
REPORTING SENSITIVITY DATA

TABLE 7: DATA ITEM DESCRIPTION - 80670

DATA ITEM DESCRIPTION		Form Approved OMB No. 0704-0188	
2. TITLE		1. IDENTIFICATION NUMBER	
REPORTING RESULTS OF ELECTROSTATIC DISCHARGE SENSITIVITY TESTS OF ELECTRICAL AND ELECTRONIC PARTS		DI-RELI-80670	
3. DESCRIPTION/PURPOSE			
3.1 This report documents the sensitivity of electrical and electronic parts to electronic parts to electrostatic discharge (ESD) specified by the test of MIL-STD-1686A Appendix A, or MIL-STD-883 Test Method 3015.			
4. APPROVAL DATA (YYMMDD)	5. OFFICE OF PRIMARY RESPONSIBILITY (OPR)	6a. DTIC APPL.	6b. GIDEP APPL.
880808	S H		
7. APPLICATION/INTERRELATIONSHIP			
7.1 This DID contains the format and content preparation instructions for that data generated under the work task described by 5.2.1.1.(d) of MIL-STD-1686A which requires the identification and classification of electrostatic discharge (ESD) sensitive parts.			
7.2 This DID will be used to input ESD sensitivity data into the Reliability Analysis Center (RAC) ESD Sensitive Items List (ESDSIL).			
7.3 This DID applies to all contracts which require ESD testing and classification of electrical and electronic parts.			
7.4 This DID supersedes DI-T-7132.			
8. APPROVAL LIMITATION		9a. APPLICABLE FORMS	9b. AMSC NUMBER
			N4517
10. PREPARATION INSTRUCTIONS			
10.1 Content requirements. The report shall include the following data:			
<ul style="list-style-type: none"> a. Complete part number b. National stock number c. Manufacturer d. Part description and function e. Date code (as it appears on the part) f. Number tested g. Test date (month and year) h. Test agency i. Description of test setup j. Number of parts failed k. ESD voltage level at which damage occurred l. Highest ESD voltage passed by all pin combinations m. Failure criteria <ul style="list-style-type: none"> 1. Description of criteria used to detect post stress failure 			
10.2 <u>Report format</u> . Contractor's format is acceptable for the above data.			
11. DISTRIBUTION STATEMENT			
<u>DISTRIBUTION STATEMENT A</u> Approved for public release; distribution unlimited			

DEFINITION OF VZAP TEST PARAMETERS

<u>Field</u>	<u>Description</u>
SOURCE	
Name	Information pertaining to the company and person responsible for performing/compiling the results of ESD simulation
Address, Phone Number	
TESTER	
Manufacturer	Manufacturer of the ESD simulator being used
Model Number	Model number and any revision information about the ESD simulator being used
TEST SPEC. METHOD	The test method by which ESD simulation was performed
Resistance	Resistance used in ESD simulation (in Ohms)
Capacitance	Capacitance used in ESD simulation (In Farads)
Voltage Step Levels	For step stress testing, the voltage step levels used, for go/no-go testing, the voltage applied
# of Pulses Per Level	For step stress enter the total number of pulses applied at the maximum failed voltage applied
Test Date	Date testing was performed
DEVICE	
Part Number	Full device part number, prefix and suffix. In situations of drawing or in-house part numbers, the generic number when available
Description	Full device description of component
Manufacturer	Manufacturer of device being tested
Date Code	Date code as found on device
TEST RESULTS	
Pass or Fail	Results of the ESD simulation for each device tested
# of Devices Tested	Number of devices tested
Failure Voltage	The voltage at which the device met failure criterion
Voltage Polarity	The polarity of the failed voltage reported
Fail Pin Combination	The pin combination for which each test was performed and note which combination yielded a failure
Failure Criterion	Explanation of what criterion was used to determine a failure



TABLE 8: VZAP TEST PARAMETERS

VZAP TEST PARAMETERS

SOURCE

Name

Address,
Phone Number

TESTER

Manufacturer

Model Number

TEST SPEC. METHOD

Resistance

Capacitance

Voltage Step Levels

of Pulses Per Level

Test Date

DEVICE

Part Number

Description

Manufacturer

Date Code

TEST RESULTS

Pass or Fail

of Devices Tested

Failure Voltage

Voltage Polarity

Fail Pin Combination

Failure Criteria

APPENDIX C

ADDITIONAL RAC SERVICES

PRODUCT FEE SCHEDULE

		Price Per Copy	
		U.S.	Non-U.S.
COMPONENT RELIABILITY DATABOOKS			
DSR-4	Discrete Semiconductor Device Reliability - 1988	100.00	120.00
NPRD-3	Nonelectronic Parts Reliability Data 1985 - (Printed Copy)	80.00	90.00
FNPRD-3	Diskette of NPRD-3 Data (IBM PC Compatible)	125.00	135.00
VZAP-2	Electrostatic Discharge Susceptibility Data - 1989	125.00	135.00
MDR-21	Trend Analysis Databook - 1985	95.00	105.00
MDR-21A	Field Experience Databook - 1985	125.00	135.00
FMDR-21A	Diskette of MDR-21A Data (IBM PC Compatible)	175.00	185.00
MDR-22	Microcircuit Screening Analysis - 1987	125.00	135.00
MDR-22A	Microcircuit Screening Data - 1987	75.00	90.00
NONOP-1	Nonoperating Reliability Data - 1987	150.00	160.00
EQUIPMENT DATABOOKS			
EERD-2	Electronic Equipment Reliability Data - 1986	80.00	95.00
EEMD-1	Electronic Equipment Maintainability Data - 1980	60.00	70.00
HANDBOOKS			
RDH-376	Reliability Design Handbook	36.00	46.00
MFAT-1	Microelectronics Failure Analysis Techniques Procedural Guide	125.00	135.00
NPS-1	Analysis Techniques for Mechanical Reliability	56.00	66.00
PRIM-1	A Primer for DoD Reliability, Maintainability and Safety Standards	95.00	115.00
PRODUCTS FOR PERSONAL COMPUTERS			
RAC-NRPS	Nonoperating Reliability Prediction Software (Price includes NONOP-1 listed above)	1400.00	1450.00
STATE-OF-THE-ART REPORTS			
SOAR-2	Practical Statistical Analysis for the Reliability Engineer	36.00	46.00
SOAR-3	IC Quality Grades: Impact on System Reliability and Life Cycle Cost	46.00	56.00
SOAR-4	Confidence Bounds for System Reliability	46.00	56.00
SOAR-5	Surface Mount Technology: A Reliability Review	56.00	66.00
SOAR-6	ESD Control in the Manufacturing Environment	56.00	66.00
TECHNICAL RELIABILITY STUDIES			
TRS-2	Search and Retrieval Index to IRPS Proceedings - 1968 to 1978	24.00	34.00
TRS-2A	Search and Retrieval Index to IRPS Proceedings - 1979 to 1984	24.00	34.00
TRS-3A	EOS/ESD Technology Abstracts - 1982	36.00	46.00
TRS-4	Search and Retrieval Index to EOS/ESD Proceedings - 1979 to 1984	36.00	46.00
TRS-5	Search and Retrieval Index to ISTFA Proceedings - 1978 to 1985	36.00	46.00

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